Mission of the Electrical Engineering Program

The focus of the Electrical Engineering degree is to provide excellent education in modern electrical engineering practice. Our graduates are uniquely qualified for rewarding and successful careers in materials, devices, circuits, digital systems, signal processing, and communications. In the spring of 2005 the EE faculty adopted a new set of Program Educational Objectives that refined the prior objectives and established measurements and benchmarks to monitor progress. A feedback mechanism using Alumni Surveys (by
the ECS Office of Assessment) and other tools are used to measure progress toward these objectives.

Program Educational Objectives for Electrical Engineering

One broad goal for the Erik Jonsson School is an excellent education for our students. Within a few years of graduation, graduates of the Electrical 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 Electrical 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 Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Academic Progress in Electrical Engineering

In order to make satisfactory academic progress as an Electrical 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 BSEE 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 Electrical Engineering

Degree Requirements [128 semester credit hours]1
Faculty


Professors Emeritus: Louis R. Hunt, William J. Pervin, Don Shaw

Research Professor: Hisashi (Sam) Shichijo

Associate Professors: Carlos A. Busso-Recabarren, Rashaunda Henderson, Wenchuang (Walter) Hu, Siavash Pourkamali, Chin-Tuan Tan

Clinical Associate Professor: Nicholas Gans

Assistant Professors: Bilal Akin, Joseph Callenes-Sloan, Benjamin Carrion Schafer, Joseph Friedman, Qing Gu, Jeyavijayan Rajendran, Chadwin D. Young

Senior Lecturers: Peter A. Blakey, Diana Cogan, Paul Deignan, James Florence, Matthew Heins, Jung Lee, Randall E. Lehmann, Ricardo E. Saad, William (Bill) Swartz, Marco Tacca

UT Dallas Affiliated Faculty: Leonidas Bleris, Yves J. Chabal, Wonjae Choi, Bruce E. Gnade, Matthew J. Goeckner, Robert D. Gregg, Zygmunt Haas, Kenneth Hoyt, Jiyoung Kim, Moon J. Kim, David J. Lary, Yang Liu, Ann Majewicz, S.O. Reza Moheimani, Wooram Park, Mario A. Rotea, Mathukumalli Vidyasagar, Amy V. Walker, Robert M. Wallace, Steve Yurkovich, Jie Zhang

I. Core Curriculum Requirements: 42 semester credit hours

Communication: 6 semester credit hours

   RHET 1302 Rhetoric
   ECS 3390 Professional and Technical Communication

Mathematics: 3 semester credit hours

   MATH 2417 Calculus I

Life and Physical Sciences: 6 semester credit hours

   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 Engineering

**Component Area Option: 6 semester credit hours**
- **MATH 2417** Calculus I
- **MATH 2419** Calculus II
- **PHYS 2125** Physics Laboratory I

### II. Major Requirements: 76 semester credit hours

**Major Preparatory Courses: 22 semester credit hours beyond Core Curriculum**
- **CHEM 1111** General Chemistry Laboratory I
- **CHEM 1311** General Chemistry I
- **CS 1325** Introduction to Programming
- **EE 1100** Introduction to Electrical Engineering
- **ECS 1100** Introduction to Engineering and Computer Science
- **EE 1202** Introduction to Electrical Engineering II
- **ENGR 2300** Linear Algebra for Engineers
- **EE 2310** Introduction to Digital Systems
- **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: 45 semester credit hours beyond Core Curriculum**
- **ECS 3361** Social Issues and Ethics in Computer Science and Engineering
- **ECS 3390** Professional and Technical Communication
EE 3101 Electrical Network Analysis Laboratory  
EE 3102 Signals and Systems Laboratory  
EE 3110 Electronic Devices Laboratory  
EE 3111 Electronic Circuits Laboratory  
EE 3120 Digital Circuits Laboratory  
EE 3150 Communications Systems Laboratory  
ENGR 3300 Advanced Engineering Mathematics  
EE 3301 Electrical Network Analysis  
EE 3302 Signals and Systems  
EE 3310 Electronic Devices  
EE 3311 Electronic Circuits  
EE 3320 Digital Circuits  
ENGR 3341 Probability Theory and Statistics  
EE 3350 Communications Systems  
EE 4301 Electromagnetic Engineering I  
EE 4310 Systems and Controls  
EE 4368 RF Circuit Design Principles  
EE 4388 Senior Design Project I  
EE 4389 Senior Design Project II

**Major Guided Electives: 9 semester credit hours**

Students pursuing the general program take 9 semester credit hours from any other 4000 level or higher Electrical Engineering courses. Independent Study in Electrical Engineering (EE 4V97), Undergraduate Research in Electrical Engineering (EE 4V98), or Senior Honors in Electrical Engineering (EE 4399) may be used for up to 6 of these hours. Students pursuing a concentration in Microelectronics take 3 of the following courses:

EE 4302 Electromagnetic Engineering II  
EE 4304 Computer Architecture  
EE 4325 Introduction to VLSI Design  
EE 4330 Integrated Circuit Technology  
EE 4340 Analog Integrated Circuit Analysis and Design  
EE 4391 Technology of Plasma

Students pursuing a concentration in Telecommunications take 3 of the following courses:

EE 4360 Digital Communications
EE 4361 Introduction to Digital Signal Processing
EE 4365 Introduction to Wireless Communication
EE 4367 Telecommunications Networks
EE 4390 Computer Networks
EE 4392 Introduction to Optical Systems

III. Elective Requirements: 10 semester credit hours

Free Electives: 10 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 electrical engineering, a Fast Track program is available to well-qualified UT Dallas undergraduate students. Qualified seniors may take up to 15 graduate semester credit hours that may be used to complete the baccalaureate degree and also to satisfy the requirements for the master's degree. 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 Department of Electrical Engineering offers Departmental Honors for outstanding students in the BS Electrical Engineering degree program. Admission to the Honors programs requires that the student meet the following qualifications:

- Has repeated no more than 3 courses at UT Dallas and has repeated no course more than once.

Graduation with Honors requires a 3.500 or better GPA and completion of either Senior Honors in Electrical Engineering (EE 4399) or Undergraduate Research in Electrical Engineering (EE 4V98). 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).

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.

https://catalog.utdallas.edu/2016/undergraduate/programs/ecs/electrical-engineering
Minors

The Department of Electrical Engineering does not offer minors at this time.

1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding school-related freshman seminar course. 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 Option Core.

5. Six semester credit hours of Physics (PHYS 2325 and PHYS 2326) are counted under Science Core and one semester credit hour (PHYS 2125) is counted under the 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 semester credit hours in the major for this class.

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