Erik Jonsson School of Engineering and Computer Science

Named in honor of one of the three founders of Texas Instruments, Inc. and of The University of Texas at Dallas, the Erik Jonsson School of Engineering and Computer Science provides undergraduate degree preparation for professional practice as an engineer or computer scientist. Particular emphasis is placed on developing strong analytical and problem solving abilities as a foundation for graduate study in these fields.

The school’s curricula emphasize electronic information processing devices and technologies that are involved with the acquisition, interpretation, transmission, and utilization of information. The school offers four degree programs: Computer Science, Electrical Engineering, Telecommunications Engineering and Software Engineering. The Computer Science program emphasizes the design and analysis of efficient parallel and sequential algorithms with applications in VLSI layout and routing, distributed networks and operating systems, image processing, computational geometry, automation and robotics. The Software Engineering program concentrates on all aspects of software development including requirements engineering, software architecture and design, program testing, validation, and quality assurance. The Electrical Engineering program offers students an opportunity to acquire a solid foundation in the broad areas of electrical engineering and emphasizes advanced study in digital systems, telecommunications, and microelectronics. The Telecommunications Engineering program is interdisciplinary. Telecommunications Engineering requires a blend of knowledge from the areas of Electrical Engineering, Computer Science, and Economics/Policy. The Electrical Engineering, Telecommunications Engineering, Software Engineering and Computer Science programs are based on a solid foundation of science and mathematics coursework. Students in these programs are given an opportunity to learn to extend their abilities to analyze and solve complex problems and to design new uses of technology to serve today’s society. The Engineering programs provide an integrated educational experience directed toward the development of the ability to apply pertinent knowledge to the identification and solution of practical problems in electrical and telecommunications engineering. These programs ensure that the design experience is developed and integrated throughout the curriculum in a sequential development leading to advanced work and includes both analytical and experimental studies. Established cooperative education programs with area industry further supplement design experiences.

The University of Texas at Dallas is located at the heart of a high concentration of companies that specialize in the areas of microelectronics, telecommunications, signal processing and optics. The Erik Jonsson School of Engineering and Computer Science maintains close relationships with these companies and has established cooperative programs through which students can obtain industrial experience to complement their classroom instruction. Details of specific cooperative programs between Computer Science and Engineering students and local companies are available in the respective program offices.

Industrial Practice Programs

The Industrial Practice Programs (IP Programs or IPP) of the Erik Jonsson School of Engineering and Computer Science include the school’s Cooperative Education, Internship, and Curricular Practical Training Programs. These programs combine classroom learning with paid work experience. Qualified students are referred to participating employers seeking candidates for career-related, pre-professional work assignments. The programs enhance a student’s education and career preparation by integrating classroom theory with on-the-job performance, providing an understanding of work environments and professional requirements, testing career and professional goals, developing confidence, maturity and skills in human relations, and establishing contacts and interests.

Students enroll in Engineering Computer Science Co-op (ECSC) courses during semesters when working on an IPP assignment. Students are expected to follow the rules of the IP programs when working in a position titled by the employer as an Internship or a Cooperative Education assignment.

For more information about the IP programs, call (972)883-4363. The IP Programs Office is located in ECS South 2.502.

Computer Science (B.S.) and Software Engineering (B.S.S.E)

Faculty

Professors: Farokh Bastani, Ramaswamy Chandrasekaran, Imrich Chlamtac, András Faragó, Dung T. Huynh, Simeon C. Ntafos, William J. Pervin, Hsing Mean (Edwin) Sha, Ivan H. Sudborough, Ioannis G. Tollis, Klaus Truemper, Si-Qing Zheng

Associate Professors: Lawrence Chung, Galigelekere R. Dattatreya, Yi Deng, Gopal Gupra, Ivor P. Page, Balaji Raghavachari, Haim Schweitzer, Subbarayan Venkatesan, I-Ling Yen
The Computer Science Department offers the B.S. degree in Computer Science and the B.S.S.E. degree in Software Engineering. Both are based on a solid foundation of mathematics, including calculus, linear algebra, and discrete mathematics. These programs of study are designed to offer students opportunities to prepare for an industrial, business, or governmental career in a rapidly changing profession and to prepare for graduate study in a field in which further education is strongly recommended. The two programs have the same basis in core computer science, including the analysis of algorithms and data structures, modern programming methodologies, and the study of operating systems. The Computer Science program continues with courses in advanced data structures, programming languages, telecommunications networks, and automata theory, while the Software Engineering program includes courses in requirements engineering, software validation and testing, and software architecture, culminating in a challenging project course in which students must demonstrate use of software engineering techniques. Both programs offer a rich choice of elective studies, including courses in artificial intelligence, computer graphics, databases, and compiler design.

The school offers a “fast track” B.S./M.S. option; see Fast Track Baccalaureate/Master’s Degree Program.

**Bachelor of Science in Computer Science**

**Degree Requirements (121 hours)**

**I. Core Curriculum Requirements**: 42 hours

A. Communication (6 hours)
   - 3 hours Communication (RHET 1302)
   - 3 hours Professional and Technical Communication (ECS 3390)

B. Social and Behavioral Sciences (15 hours)
   - 6 hours Government (GOVT 2301 and 2302)
   - 6 hours American History
   - 3 hours Social and Behavioral Science elective (ISSS 3360)

C. Humanities and Fine Arts (6 hours)
   - 3 hours Fine Arts (AP 1301)
   - 3 hours Humanities (HUMA 1301)

D. Mathematics and Quantitative Reasoning (6 hours)
   - 6 hours Calculus (MATH 2417 and 2419)

E. Science (9 hours)
   - 6 hours Lecture courses (PHYS 2325 and 2326)
   - 2 hours Laboratory courses (PHYS 2125 and 2126)
   - 4 hours Science Elective

Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

**II. Major Requirements**: 58 hours

Major Preparatory Courses (22 hours beyond Core Curriculum)
- CS 1315 Computer Science I
- CS 2110 Introduction to Digital Systems Laboratory
- CS 2305 Discrete Mathematics for Computing I
- CS 2310 Introduction to Digital Systems
- CS 2315 Computer Science II
- MATH 2417 Calculus I
- MATH 2418 Linear Algebra
- MATH 2419 Calculus II
- PHYS 2125 Physics Laboratory I
- PHYS 2126 Physics Laboratory II
- PHYS 2225 Mechanics and Heat
- PHYS 2326 Electromagnetism and Waves
- 4 hours Science Elective
Major Core Courses (27 hours beyond Core Curriculum)
- CS 3305 Discrete Mathematics for Computing II
- CS/SE 3341 Probability and Statistics in Computer Science
- CS/SE 3345 Algorithm Analysis and Data Structures
- CS/SE 3354 Software Engineering
- CS 4337 Organization of Programming Languages
- CS/SE 4340 Computer Architecture
- CS/SE 4348 Operating Systems Concepts
- CS 4349 Advanced Data Structures and Algorithms
- CS 4384 Automata Theory
- ECS 3390 Professional and Technical Communication

Major Guided Electives (9 hours)
- CS guided electives are 4000 level CS courses approved by the student’s CS advisor. The following courses may be used as guided electives without the explicit approval of an advisor:
  - CS 4334 Numerical Analysis
  - CS 4336 Advanced Java Programming
  - CS/SE 4347 Database Systems
  - CS 4361 Computer Graphics
  - CS 4365 Artificial Intelligence
  - CS/SE 4376 Object-Oriented Programming Systems
  - CS 4380 Senior Design Project
  - CS 4386 Compiler Design
  - CS/TE 4390 Computer Networks
  - CS/SE 4399 Senior Honors in Computer Science/Software Engineering
  - EE 4325 Introduction to VLSI Design
  - EE 4420 Microprocessor Systems Design
  - SE 4351 Requirements Engineering
  - SE 4352 Software Architecture and Design
  - SE 4367 Software Testing, Verification, Validation and Quality Assurance
  - SE 4385 Software Engineering Project

  2 Hours fulfill the communication elective of the Core Curriculum.
  3 Six hours of Calculus are counted under Mathematics Core, and two hours of Calculus are counted as Major Preparatory Courses.
  4 Nine hours of Science are counted under Science Core. Three hours are counted under Major Preparatory Courses.

III. Elective Requirements: 21 hours

Advanced Electives (6 hours)
- All students are required to take at least six hours of advanced electives outside their major field of study. These must be either upper-division classes or lower-division classes that have prerequisites.

Free Electives (15 hours)
- All students must accumulate at least 120 hours of university credit to graduate. Both lower- and upper-division courses may count as free electives but students must complete at least 51 hours of upper-division credit to qualify for graduation. Not all courses offered by the University can be used as a free elective. Please consult with your advisor.

Fast Track Baccalaureate/Master’s Degrees

In response to the need for post-baccalaureate education in the exciting field of computer science, a Fast Track program is available to exceptionally well-qualified students who choose their courses carefully. At the end of five years of successful study, it is possible to earn both the B.S. and the M.S. degrees in Computer Science. Being within 30 hours of graduation, a student admitted to the graduate program and accepted into the Fast Track program may, during the senior year, take 15 graduate hours that may be used to complete the baccalaureate degree and also to satisfy requirements for the master’s degree.

Interested students should see the Associate Dean of Undergraduate Education (ADU) for specific admission requirements to the Fast Track program.
Course of Study for Non-CS Majors

In recognition of the increased importance of Computer Science principles and skills in today's technology-driven marketplace, U.T. Dallas offers a number of Computer Science courses that, with proper preparation, can be taken by non-CS majors. An appropriate selection of the following courses, taken in an order satisfying course prerequisites, can significantly enhance the professional skills of the non-CS major: CS 1315/1115, CS 2305, CS 2315, CS 3333/3133, CS 3335, CS 3336, CS 3341, CS 3354, CS 3375, and CS 4376.

Minors

The Erik Jonsson School of Engineering and Computer Science does not offer minors at this time.

Bachelor of Science in Software Engineering

Degree Requirements (120 hours)

I. Core Curriculum Requirements: 42 hours
   A. Communication (6 hours)
      3 hours Communication (RHET 1302)
      3 hours Professional and Technical Communication (ECS 3390)
   B. Social and Behavioral Sciences (15 hours)
      6 hours Government (GOVT 2301 and 2302)
      6 hours American History
      3 hours Social and Behavioral Science Elective (ISSS 3360)
   C. Humanities and Fine Arts (6 hours)
      3 hours Fine Arts (AP 1301)
      3 hours Humanities (HUMA 1301)
   D. Mathematics and Quantitative Reasoning (6 hours)
      6 hours Calculus (MATH 2417 and 2419)
   E. Science (9 hours)
      6 hours Lecture courses (PHYS 2325 and 2326)
      2 hours Laboratory courses (PHYS 2125 and 2126)
      4 hours Science Elective

Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

II. Major Requirements: 57 hours
   Major Preparatory Courses (21 hours beyond Core Curriculum)
      CS 1315 Computer Science I
      CS 2305 Discrete Mathematics for Computing I
      CS 2315 Computer Science II
      MATH 2417 Calculus I
      MATH 2418 Linear Algebra
      MATH 2419 Calculus II
      PHYS 2125 Physics Laboratory I
      PHYS 2126 Physics Laboratory II
      PHYS 2325 Mechanics and Heat
      PHYS 2326 Electromagnetism and Waves
      SE 2370 Mathematical Foundations of Software Engineering
      4 hours Science Elective
   Major Core Courses (27 hours beyond Core Curriculum)
      CS/SE 3341 Probability and Statistics in Computer Science
      CS/SE 3345 Algorithm Analysis and Data Structures
      CS/SE 3354 Software Engineering
      CS/SE 4340 Computer Architecture
      CS/SE 4348 Operating Systems Concepts
ECS 3390 Professional and Technical Communication
SE 4351 Requirements Engineering
SE 4352 Software Architecture and Design
SE 4367 Software Testing, Verification, Validation and Quality Assurance
SE 4385 Software Engineering Project

Major Guided Electives (9 hours)
CS guided electives are 4000 level CS courses approved by the student’s CS advisor. The following courses may be used as guided electives without the explicit approval of an advisor:
- CS 4334 Numerical Analysis
- CS 4336 Advanced Java Programming
- CS 4337 Organization of Programming Languages
- CS/SE 4347 Database Systems
- CS 4361 Computer Graphics
- CS 4365 Artificial Intelligence
- CS/SE 4376 Object Oriented Programming Systems
- CS 4384 Automata Theory
- CS 4386 Compiler Design
- CS 4390 Computer Networks
- CS/SE 4399 Senior Honors in Computer Science/Software Engineering
- EE 4325 Introduction to VLSI Design
- EE 4420 Microprocessor Systems Design

2 Hours fulfill the communication elective of the Core Curriculum.
3 Six hours of Calculus are counted under Mathematics Core, and two hours of Calculus are counted as Major Preparatory Courses.
4 Nine hours of Science are counted under Science Core. Three hours are counted as Major Preparatory Courses.

III. Elective Requirements: 21 hours

Advanced Electives (6 hours)
All students are required to take at least six hours of advanced electives outside their major field of study. These must be either upper-division classes or lower-division classes that have prerequisites.

Free Electives (15 hours)
All students must accumulate at least 120 hours of university credit to graduate. Both lower and upper-division courses may count as free electives but students must complete at least 51 hours of upper-division credit to qualify for graduation. Not all courses offered by the University can be used as a free elective. Please consult with your advisor.

Fast Track Baccalaureate/Master’s Degrees
In response to the need for advanced education in electrical engineering, a Fast Track program is available to exceptionally well-qualified U.T. Dallas undergraduate students who meet the requirements for admission to the graduate school. The Fast Track program is designed to accelerate a student’s or a B.S.T.E. and an M.S.T.E. Master.

3 + 2 Programs
The University of Texas at Dallas offers "3 + 2" programs with Abilene Christian University, Austin College, Paul Quinn College, and Texas Woman's University. These programs combine the strengths of these respective institutions with those of The University of Texas at Dallas, and permit students to earn two undergraduate degrees simultaneously while preparing for a professional career in engineering. Full-time undergraduate students attend one of the institutions listed above, majoring in mathematics, physics, or computer science for three years, and then continue their education for two years at The University of Texas at Dallas, majoring in electrical engineering. After completion of the program, students receive the Bachelor of Science degree in their chosen major from one of the above institutions and the B.S.E.E. degree from U.T. Dallas. Further details of the individual programs and persons to contact at the respective institutions can be obtained from the U.T. Dallas Electrical Engineering Program Office.
Minors
The Erik Jonsson School of Engineering and Computer Science does not offer minors at this time.

Electrical Engineering (B.S.E.E. and B.S.T.E.)

Faculty
Associate Professors: Dinesh Bhatia, Gerald O. Burnham, Dale M. Byrne, Andrea F. Fumagalli, Matthew Goeckner, Philipos C. Loizou, Assistant Professors: Adele B. Doser, Jeong-Bong Lee, Jin Liu, Aria Nostratinia, Mehrdad Nourani, Kamlesh Rath, Murat Torlak, Mohammad Saqib, Samuel Villareal
Senior Lecturers: Nathan Dodge, R. Stephen Gibbs

The Electrical Engineering Department offers two engineering programs: Electrical Engineering and Telecommunications Engineering. The Electrical Engineering program offers students an opportunity to acquire a solid foundation in the broad areas of electrical engineering and emphasizes advanced study in digital systems, telecommunications, and microelectronics.

The Electrical Engineering program offers students a solid educational foundation in the areas of electrical networks, electronics, electromagnetics, computers, digital systems, and communications and is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). Mastery of these areas provides students with the ability to adapt and maintain leadership roles in their post-baccalaureate pursuits through the application of fundamental principles to a rapidly changing and growing discipline.

Students in the Electrical Engineering program take either the general program or specialize in microelectronics or telecommunications, and can take advanced courses in computer hardware and software; the analysis and design of analog and digital communication systems; analog and digital signal processing; the analysis, design, and fabrication of microelectronic components and systems; and guided and unguided wave propagation. A broad choice of electives (within and external to electrical engineering) allows students to broaden their education as well as develop expertise in areas of particular interest. In keeping with the role of a professional, students are expected to develop communication skills and an awareness of the relationship between technology and society.

The Telecommunications Engineering program is interdisciplinary. Telecommunications Engineering requires a blend of knowledge from the areas of Electrical Engineering, Computer Science, and Economics/Policy.

The Electrical and Telecommunications Engineering programs are based on a solid foundation of science and mathematics coursework. Students in these programs are given an opportunity to learn to extend their abilities to analyze and solve complex problems and to design new uses of technology to serve today’s society. The engineering programs provide an integrated educational experience directed toward the development of the ability to apply pertinent knowledge to the identification and solution of practical problems in electrical and telecommunications engineering. These programs ensure that the design experience, which includes both analytical and experimental studies, is integrated throughout the curriculum in a sequential development leading to advanced work. Design problems are frequently assigned in both lecture and laboratory courses. Each student is required to complete a major design project during the senior year. In addition, established cooperative education programs with area industry further supplement design experiences.

High School Preparation
Engineering education requires a strong high school preparation. Preengineering 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 preengineering 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 U.T. Dallas from
other institutions as well as to those currently enrolled at U.T. Dallas, whether in another school or in the Erik Jonsson School of Engineering and Computer Science.

**ABET Requirements**

All engineering degree plans must satisfy the requirements specified by the Accreditation Board for Engineering and Technology (ABET). The course work must include at least:

1. One year (32 SCH) of an appropriate combination of mathematics and basic sciences,
2. One-half year (16 SCH) of humanities and social sciences,
3. One and one-half years (48 SCH) of engineering topics.

Although the electrical engineering and telecommunications engineering curricula that follow have been designed to meet these criteria, students have the responsibility, in consultation with an advisor, to monitor their own choice of courses carefully to be certain that all academic requirements for graduation are being satisfied. Students are strongly encouraged to take courses in such subjects as accounting, industrial management, finance, personnel administration, and engineering economy.

**Bachelor of Science in Electrical Engineering Degree Requirements (128 hours)**

I. **Core Curriculum Requirements**: 42 hours

A. Communication (6 hours)
   - 3 hours Communication (RHET 1302)
   - 3 hours Professional and Technical Communication (ECS 3390)

B. Social and Behavioral Sciences (15 hours)
   - 6 hours Government (GOVT 2301 and 2302)
   - 6 hours American History
   - 3 hours Social and Behavioral Science elective (ISSS 3360)

C. Humanities and Fine Arts (6 hours)
   - 3 hours Fine Arts (AP 1301)
   - 3 hours Humanities (HUMA 1301)

D. Mathematics and Quantitative Reasoning (6 hours)
   - 6 hours Calculus (MATH 2417 and 2419)

E. Science (9 hours)
   - 8 hours Physics (PHYS 2325, 2125, 2326 and 2126)
   - 4 hours Chemistry (CHEM 1311 and 1111)

*Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

II. **Major Requirements**: 74 hours

Major Preparatory Courses (20 hours beyond Core Curriculum)

CHEM 1111 General Chemistry Laboratory
CHEM 1311 General Chemistry
CS 1315 Computer Science I
EE 1102 Introduction to Experimental Techniques
EE 2110 Introduction to Digital Systems Laboratory
EE 2300 Applied Linear Algebra
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 and Heat
PHYS 2326 Electromagnetism and Waves

Major Core Courses (45 hours beyond Core Curriculum)
ECS 3390 Professional and Technical Communication
EE/TE 3101 Electrical Network Analysis Laboratory
EE/TE 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
EE 3300 Advanced Engineering Mathematics
EE/TE 3301 Electrical Network Analysis
EE/TE 3302 Signals and Systems
EE 3310 Electronic Devices
EE 3311 Electronic Circuits
EE 3320 Digital Circuits
EE/TE 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 438X Senior Design Project I
EE 438X Senior Design Project II
ISSS 3360 Politics, Values - Business and Technology

6

Major Guided Electives (9 hours)

Students pursuing the general program take 9 semester hours from either list below.

Students pursuing a concentration in Microelectronics take 3 of the following courses:
EE 4304 Computer Architecture
EE 4325 Introduction to VLSI Design
EE 4330 Integrated Circuit Technology
EE 4340 Analog Integrated Circuit Analysis and Design
EE 4341 Digital Integrated Circuit Analysis and Design
EE/TE 4382 Individually Supervised Design Project (Microelectronics)

Students pursuing a concentration in Telecommunications take 3 of the following courses:
EE 4360 Digital Communications
EE 4361 Introduction to Digital Signal Processing
EE/TE 4365 Introduction to Wireless Communication
EE/TE 4367 Telecommunications Switching and Transmission
EE 4390 Introduction to Telecommunication Networks

2 Six hours of Calculus are counted under Mathematics Core, and two hours of Calculus are counted as Major Preparatory Courses.
3 One hour of Chemistry is counted under Science core, and three hours are counted as Major Preparatory Courses.
4 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.
5 Hours fulfill the communication component of the Core Curriculum
6 Hours fulfill the Social and Behavioral Sciences component of the Core Curriculum

III. Elective Requirements: 12 hours

Advanced Electives (6 hours)

All students are required to take at least six hours of advanced electives outside their major field of study. These must be either upper-division classes or lower-division classes that have prerequisites.

Free Electives (6 hours)

Both lower- and upper-division courses may count as free electives but students must complete at least 51 hours of upper-division credit to qualify for graduation. Not all courses offered by the University can be used as a free elective. Please consult with your advisor.

Fast Track Baccalaureate/Master’s Degrees

In response to the need for advanced education in electrical engineering, a Fast Track program is available to exceptionally well-qualified U.T. Dallas undergraduate students who meet the requirements for admission to the graduate school. The Fast Track program is designed to accelerate a student’s education so that both a B.S.E.E. and an M.S.E.E. 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 course work during the senior year. Details of the requirements for admission to this program are available from the Associate Dean.

3 + 2 Programs
The University of Texas at Dallas offers “3 + 2” programs with Abilene Christian University, Austin College, Paul Quinn College, and Texas Woman’s University. These programs combine the strengths of these respective institutions with those of The University of Texas at Dallas and permit students to earn two undergraduate degrees simultaneously while preparing for a professional career in engineering. Full-time undergraduate students attend one of the institutions listed above, majoring in mathematics, physics, or computer science for three years, and then continue their education for two years at The University of Texas at Dallas, majoring in electrical engineering. After completion of the program, students receive the Bachelor of Science degree in their chosen major from one of the above institutions and the B.S.E.E. degree from U.T. Dallas. Further details of the individual programs and persons to contact at the respective institutions can be obtained from the U.T. Dallas Electrical Engineering Program Office.

Minors
The Erik Jonsson School of Engineering and Computer Science does not offer minors at this time.

Bachelor of Science in Telecommunications Engineering
Degree Requirements (125 hours)

I. Core Curriculum Requirements: 42 hours
A. Communication (6 hours)
   3 hours Communication (RHET 1302)
   3 hours Professional and Technical Communication (ECS 3390)¹
B. Social and Behavioral Sciences (15 hours)
   6 hours Government (GOVT 2301 and 2302)
   6 hours American History
   3 hours Social and Behavioral Sciences elective (ISSS 3360)
C. Humanities and Fine Arts (6 hours)
   3 hours Fine Arts (AP 1301)
   3 hours Humanities (HUMA 1301)
D. Mathematics and Quantitative Reasoning (6 hours)
   6 hours Calculus (MATH 2417 and 2419)²
E. Science (9 hours)
   8 hours Physics (PHYS 2325, 2125, 2326 and 2126)³
   4 hours Chemistry (CHEM 1311 and 1111)³

¹ Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses listed in parentheses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at U.T. Dallas.

II. Major Requirements: 71 hours
Major Preparatory Courses (20 hours beyond Core Curriculum)
   CHEM 1111 General Chemistry Laboratory ¹
   CHEM 1311 General Chemistry ¹
   CS 1315 Computer Science I
   CS 2315 Computer Science II
   EE 1102 Introduction to Experimental Techniques
   EE 2110 Introduction to Digital Systems Laboratory
   EE 2310 Introduction to Digital Systems
   MATH 2417 Calculus I
   MATH 2419 Calculus II³
   MATH 2420 Differential Equations With Applications
   PHYS 2125 Physics Laboratory I
   PHYS 2126 Physics Laboratory II²
   PHYS 2325 Mechanics and Heat³
PHYS 2326 Electromagnetism and Waves

Major Core Courses (51 hours beyond Core Curriculum)
- CS 4340 Computer Architecture
- CS/TE 4348 Operating Systems Concepts
- CS/TE 4390 Computer Networks
- ECS 3390 Professional and Technical Communication
- EE/TE 3101 Electrical Network Analysis Laboratory
- EE/TE 3102 Signals and Systems Laboratory
- EE 3150 Communications Systems Laboratory
- EE 3300 Advanced Engineering Mathematics
- EE/TE 3301 Electrical Network Analysis
- EE/TE 3302 Signals and Systems
- EE/TE 3341 Probability Theory and Statistics
- EE 3350 Communications Systems
- EE 4360 Digital Communications
- EE 4361 Introduction to Digital Signal Processing
- EE/TE 4365 Introduction to Wireless Communication
- EE/TE 4367 Telecommunications Switching and Transmission
- TE 3307 Discrete Mathematics
- TE 3346 Computer Algorithm Analysis and Data Structures
- TE 438X Senior Design Project I
- TE 438X Senior Design Project II
- ISSS 3360 Politics and Values in Business and Technology

2 Six hours of Calculus are counted under Mathematics Core above, and two hours of Calculus are counted as Major Preparatory Courses.
3 Nine hours of science are counted under Science Core. Three hours are counted under Major Preparatory Courses.
4 Students must have passed each of the CS, Math, Science, EE and TE courses listed above, and each of their prerequisites, with a grade of C- or better.
5 Hours fulfill the communication component requirement of the Core Curriculum

III. Elective Requirements 12 hours
Advanced Electives (6 hours)
- All students are required to take at least six hours of advanced electives outside their major field of study. These must be either upper-division classes or lower-division classes that have prerequisites.
Free Electives (6 hours)
- Both lower- and upper-division courses may count as free electives, but students must complete at least 51 hours of upper-division credit to qualify for graduation. Not all courses offered by the University can be used as a free elective. Please consult with your advisor.

Fast Track Baccalaureate/Master’s Degrees
In response to the need for advanced education in electrical engineering, a Fast Track program is available to exceptionally well-qualified U.T. Dallas undergraduate students who meet the requirements for admission to the graduate school. The Fast Track program is designed to accelerate a student’s education so that both a B.S.E.E. and an M.S.E.E. 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 course work during the senior year. Details of the requirements for admission to this program are available from the Associate Dean’s Office.

Minors
The Erik Jonsson School of Engineering and Computer Science does not offer minors at this time.