Erik Jonsson School of Engineering and Computer Science

Interdisciplinary Programs

The Erik Jonsson School of Engineering and Computer Science offers a Bachelor of Science program in Computer Engineering. This program is delivered by the combined faculties of the Departments of Computer Science and Electrical Engineering.

Computer Engineering (BS)

The Computer Engineering program is interdisciplinary. It was designed by the combined faculties of the Computer Science Department and the Electrical Engineering Department. Computer Engineering requires a blend of knowledge from the areas of hardware (Electrical Engineering) and software (Computer Science). The focus of the Computer Engineering degree is to provide an excellent education in modern computer systems and prepare its graduates for outstanding careers in the rapidly changing and growing profession and for further continuing education.

The Computer Engineering program is based on a solid foundation of science and mathematics coursework. Students have opportunities to expand their abilities to analyze and solve complex problems and to design new uses of technology to serve society. This program provides an integrated educational experience directed toward the development of the ability to apply pertinent knowledge to the identification and solution of practical problems in computer engineering.

The Computer Engineering curriculum ensures that the design experience, which includes both analytical and experimental studies, is integrated throughout 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, internships and cooperative education programs with area companies may further supplement a student's design experiences.

Mission of the Computer Engineering (CE) Program

The mission of the Computer Engineering Program is to provide an excellent education in modern computer engineering practice. Our graduates are highly qualified for rewarding and successful careers in a diverse range of computer engineering fields.

Program Educational Objectives for Computer Engineering

The UT Dallas Computer Engineering Program educational objectives will enable our graduates within a few years of graduation to:

- Successfully pursue a diverse range of careers as computer engineers, consultants, educators, and/or entrepreneurs as well as pursue advanced education.
- Be effective contributors and leaders in both professional and personal settings.
- Serve their profession and/or employer in a responsible, ethical, creative, and enthusiastic manner to meet the needs of industry and society
- Continue to learn and improve through self-motivation.

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 them to move immediately into demanding college courses in calculus, calculus-based physics, and chemistry for science majors. Pre-Computer Engineering students should have some experience with elementary programming in a high level language such as C, C++, or Java. 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 Computer 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 Computer Engineering is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Academic Progress in Computer Engineering

In order to make satisfactory academic progress as a Computer 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 BS 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 Computer Engineering

Degree Requirements (126 semester credit hours)[1]

View an Example of Degree Requirements by Semester

Affiliated Faculty

FACG> ecs-computer-engineering-bs

Professors: Poras T. Balsara, Farokh B. Bastani, Dinesh Bhatia, Ovidiu Daescu, Ding-Zhu Du, Andrea Fumagalli, Gopal Gupta, John H. L. Hansen, Nasser Kehtarnavaz, Kamran Kiasaleh, Giorgos (Yiorgos) Makris, Hlaing Minn, Mehrdad Nourani, Ivor P. Page, Issa M. S. Panahi, Balakrishnan Prabhakaran, Carl Sechen, Lakshman Tamil, Subbarayan Venkatesan, Weili Wu, I-Ling Yen, Kang Zhang, Si Qing Zheng, Dian Zhou

Associate Professors: Jorge A. Cobb, Neeraj Mittal, Chin-Tuan Tan

Assistant Professors: Benjamin Carrion Schafer, Joseph Friedman, Yang Hu, Cong Liu

Professor Emeritus: William J. Pervin

Senior Lecturers: Md Ali, Diana Cogan, Chris I. Davis, Richard Goodrum, Greg Ozbirn, William (Bill) Swartz, Marco Tacca

I. Core Curriculum Requirements: 42 semester credit hours[2]

Communication: 6 semester credit hours

RHET 1302 Rhetoric

ECS 3390 Professional and Technical Communication[3]

Mathematics: 3 semester credit hours

MATH 2417 Calculus I[4]

Life and Physical Sciences: 6 semester credit hours

PHYS 2325 Mechanics[5]

PHYS 2326 Electromagnetism and Waves[5]

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

Select any 3 semester credit hours from Social and Behavioral Sciences Core courses (see advisor)

Component Area Option: 6 semester credit hours

MATH 2417 Calculus I[4]

MATH 2419 Calculus II[4]

PHYS 2125 Physics Laboratory I[5]

II. Major Requirements: 79 semester credit hours

Major Preparatory Courses: 24 semester credit hours including 5 listed above in Core Curriculum

CE 1100 Introduction to Electrical and Computer Engineering[6]

CE 1202 Introduction to Electrical Engineering II[6]

CE 1337 Computer Science I

ECS 1100 Introduction to Engineering and Computer Science[6]

ENGR 2300 Linear Algebra for Engineers

CE 2305 Discrete Mathematics for Computing I

CE 2310 Introduction to Digital Systems

CE 2336 Computer Science II

MATH 2417 Calculus I[4]

MATH 2419 Calculus II[4]

MATH 2420 Differential Equations with Applications

PHYS 2125 Physics Laboratory I[5]

PHYS 2126 Physics Laboratory II

PHYS 2325 Mechanics[5]

PHYS 2326 Electromagnetism and Waves[5]

Major Core Courses: 46 semester credit hours beyond Core Curriculum

CE 3161 Social Issues and Ethics in Engineering

CE 3201 Electrical and Computer Engineering Fundamentals-I Laboratory

CE 3202 Electrical and Computer Engineering Fundamentals-II Laboratory

ECS 3390 Professional and Technical Communication[3]

CE 3301 Electrical Network Analysis

CE 3303 Discrete Time Signals and Systems

CE 3310 Electronic Devices

CE 3311 Electronic Circuits

CE 3320 Digital Circuits

ENGR 3341 Probability Theory and Statistics

CE 3345 Data Structures and Introduction to Algorithmic Analysis

CE 3354 Software Engineering

CE 4304 Computer Architecture

CE 4348 Operating Systems Concepts

CE 4370 Embedded Systems

CE 4388 Senior Design Project I

CE 4389 Senior Design Project II

Select one of the following laboratories:

CE 4201 Electrical and Computer Engineering Laboratory in Computing Systems and Computer Engineering

CE 4202 Electrical and Computer Engineering Laboratory in Circuits

CE 4203 Electrical and Computer Engineering Laboratory in Signals and Systems

CE 4204 Electrical and Computer Engineering Laboratory in Devices

CE 4205 Electrical and Computer Engineering Laboratory in Power Electronics and Energy Systems

Major Guided Electives: 9 semester credit hours

Students take 9 semester credit hours from any 4000 level course from the list below. Independent Study in Computer Engineering (CE 4V97), Undergraduate Research in Computer Engineering (CE 4V98), or Senior Honors in Computer Engineering (CE 4399) may be used for up to 6 of these hours.

EE 4325 Introduction to VLSI Design

EE 4330 Integrated Circuit Technology

EE 4340 Analog Integrated Circuit Analysis and Design

EE 4360 Digital Communications

EE 4361 Introduction to Digital Signal Processing

EE 4365 Introduction to Wireless Communication

EE 4367 Telecommunications Networks

EE 4342 Introduction to Robotics

EE 4363 Introduction to Power Electronics

EE 4371 Introduction to MEMS

CS 4332 Introduction to Programming Video Games

CS 4334 Numerical Analysis

CS 4337 Organization of Programming Languages

CS 4347 Database Systems

CS 4352 Human Computer Interactions

CS 4361 Computer Graphics

CS 4365 Artificial Intelligence

CS 4375 Introduction to Machine Learning

CS 4384 Automata Theory

CS 4389 Data and Applications Security

CS 4390 Computer Networks

CS 4392 Computer Animation

CS 4393 Computer and Network Security

CS 4398 Digital Forensics

III. Elective Requirements: 5 semester credit hours

Free Electives: 5 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 computer 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 Computer Engineering Program offers Departmental Honors for outstanding students in the BS Computer 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 Computer Engineering (CE 4399) or Undergraduate Research in Computer Engineering (CE 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.

Minors

The School of Engineering and Computer Science does not offer a minor in Computer Engineering 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 are counted under Science core, and one semester credit hour of Physics (PHYS 2125) is counted as Component Area Option Core.

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

Updated: 2020-04-30 10:55:33 v13.3066c9