

## Bachelor of Science in Computer Engineering

Computer engineering combines some of the thought-provoking aspects of computer science and electrical engineering. Computer engineers are particularly important today because embedded systems, which integrate hardware and software, are increasingly common in robotics, cellphones, MP3 players and elsewhere. Computer engineers are knowledgeable about both hardware and software, so they're in high demand wherever embedded systems are used.

### Careers in Computer Engineering

Computer engineering concerns the design, construction, implementation and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineers work with computer systems in a wide range of products, including vehicle fuel-injection systems, medical devices and a vast assortment of household devices. Computer engineers design computer systems and components, develop and test prototypes and help take them to market.

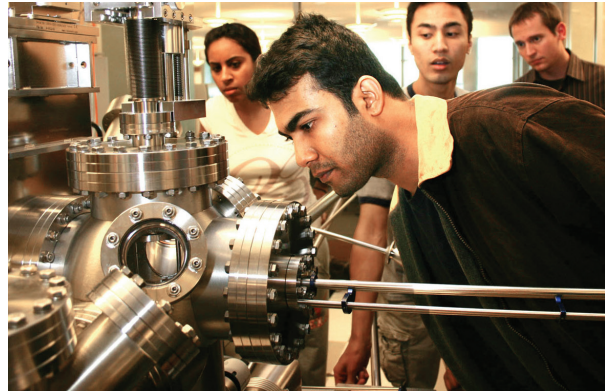
Having evolved over the past three decades as a separate discipline, computer engineering is solidly grounded in theories and principles of computing, mathematics, science and engineering, and it applies these theories and principles to solve technical problems through the design of computer hardware, software, networks and processes.

### High School Preparation

Engineering education requires strong high school preparation. Pre-engineering students should have had at least one semester of trigonometry and at least one year each in elementary algebra, intermediate and advanced algebra, plane geometry, chemistry and physics, to prepare 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's also essential that pre-engineering students be able to read rapidly and write clearly.

### Computer Engineering at UT Dallas

The computer engineering, or CE, curriculum is centered on system-level design, computer architecture and computer applications. This includes circuits and devices, computer systems and engineering software systems. Computer engineering at UT Dallas is a broadly based engineering



discipline dealing with the sensing, processing and transmission of information by making extensive use of electrical engineering and computer science principles. The CE program also encourages students and faculty to develop synergies with disciplines outside of engineering such as the life sciences. CE faculty members are actively involved in advanced research and teaching in all major areas of computer engineering, and the school has a large infrastructure of computing and laboratory resources.

### Internships and Fast-Track

The Jonsson School operates one of the largest internship and cooperative education programs of its kind, averaging more than 1,200 undergraduate and graduate student placements a year at Dallas-area high-tech companies, including Texas Instruments, Intel, Raytheon, Alcatel-Lucent and IBM.

The Fast-Track Program enables exceptionally gifted undergraduate students to include master's level courses in their undergraduate degree plans. When Fast-Track students graduate with a bachelor's degree, they are automatically admitted to graduate school at UT Dallas. The hours required to complete the master's degree are reduced by up to 15 hours by the number of Fast-Track graduate hours completed. So a Fast-Track undergraduate who passed 12 hours of graduate coursework would have only 21 hours of graduate coursework left in order to complete a master's degree.

## Erik Jonsson School of Engineering and Computer Science

Strategically located in the Telecom Corridor, home of the second-largest high-tech economy in the U.S., the Jonsson School recently completed a major public-private initiative that greatly expanded its capabilities and included construction of a new state-of-the-art 220,000-square-foot interdisciplinary research building.

With nearly 160 tenured/tenure-track faculty members, 5,800 students, and almost \$51 million in research funding, the Jonsson School has six academic departments:

- Bioengineering
- Computer Science
- Electrical and Computer Engineering
- Materials Science and Engineering
- Mechanical Engineering
- Systems Engineering

The school also offers a minor in nanoscience and technology.

### Degrees Offered

**Bachelor of Science:** Biomedical engineering, computer engineering, computer science, electrical engineering, mechanical engineering, software engineering

**Master of Science:** Biomedical engineering, computer engineering, computer science, electrical engineering, materials science and engineering, mechanical engineering, software engineering, systems engineering and management\*, telecommunications engineering

**Doctor of Philosophy:** Biomedical engineering, computer engineering, computer science, electrical engineering, materials science and engineering, mechanical engineering, software engineering, telecommunications engineering

\*Joint program between Jindal School of Management and Erik Jonsson School of Engineering and Computer Science

### Research

Research efforts under way at the school involve such cutting-edge technology as:

- Carbon nanotubes
- Micro-electromechanical systems
- Semiconductor design and manufacturing
- Wireless networking
- Cochlear implant technology
- Medical imaging
- Speech recognition

- Cybersecurity
- Organic electronics
- Materials characterization
- Physical, chemical and biosensors

### Additional Facts

- The Jonsson School's recent growth surge has helped propel its undergraduate programs into *U.S. News & World Report's* annual rankings of the nation's top schools of engineering.
- The school's graduate program has continued its rise through the national *U.S. News* rankings, now placing among the top 45 public university graduate programs and ranking third in Texas.
- The Jonsson School has significantly increased the size of its faculty in recent years, hiring top recent graduates of Stanford University, Cornell University, Purdue University, Georgia Tech and UCLA as well as seasoned professionals from Rutgers University, USC, UC Davis, and from companies such as Freescale Semiconductor and Texas Instruments.
- The Jonsson School features a variety of student organizations that are actively involved in both academic and social activities. Completely student-run, these include the Association for Computing Machinery, the Game Development Group, the National Society of Black Engineers, a chapter of the scientific research society Sigma Xi, the Society of Hispanic Professional Engineers and the Society of Women Engineers.
- Jonsson School students took first place in their division of the 2007, 2009, 2011 and 2015 BattleBots National Championship, and they won first place in the 2015 American Society of Mechanical Engineers Manufacturing Science and Engineering Conference.

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