Bachelor of Science in Software Engineering

Software engineering is a young profession, and yet it has quickly become vital to the software industry because they bring a broad, systematic approach to developing, operating and maintaining software. Their work is especially important because of the impact of today’s large software systems, including safety-critical applications in aviation and national defense.

Careers in Software Engineering

Like most high-tech professionals, software engineers generally work on teams of engineers from various disciplines. Within those teams, software engineers are responsible for seeing the big picture, helping ensure the team produces software that addresses customer needs, complies with industry standards and can evolve over time.

The expanding integration of Internet technologies and the growth in electronic commerce have resulted in the rising demand for software engineers. And as computer systems in business and government alike continue to become more sophisticated, growing numbers of software engineers are expected to be needed to implement, safeguard and update systems. Software engineers also play an important role in the continuing shift toward mobile technology and in protecting networks and electronic infrastructure from attacks.

High School Preparation

Software engineering requires strong high school preparation. A minimum of elementary algebra and geometry should be completed, while trigonometry, calculus, physics and chemistry are highly recommended. Any Advanced Placement courses in computer science or advanced technology are highly beneficial, and solid communication skills are very important.

Software Engineering at UT Dallas

The software engineering program is part of the University’s Computer Science Department, which features an internationally recognized faculty and a 150,000-square-foot building with state-of-the-art laboratories.

Like the BS degree in computer science, the BS in software engineering is based on a mathematical foundation that includes calculus, linear algebra and discrete mathematics. The two programs also have the same computer science core, including modern programming methodologies, the analysis of algorithms and data structures and the study of operating systems. While the computer science program continues with courses in advanced data structures, programming languages and automata theory, the software engineering program includes courses in requirements engineering, software validation and testing, and software architecture. There is also a rich choice of application areas, including digital systems design, computer networks, embedded systems, computer imaging, artificial intelligence and human-computer interaction.

Internships and Fast-Track

The Erik Jonsson School operates one of the largest internship and cooperative education programs of its kind, averaging more than 1,100 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 150 tenured/tenure-track faculty members, 5,800 students, and almost $47 million in research funding, the Jonsson School has six academic departments:

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

In addition, the school 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

**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.

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