Erik Jonsson School of Engineering and Computer Science

Advances in technology are causing some of the most dramatic changes in the history of civilization. With a mandate from the State of Texas, Texas Instruments and industry, the Erik Jonsson School of Engineering & Computer Science is emerging as a national leader in the technological revolution.

The achievements of the Erik Jonsson School in its short 29-year history include:

- The school is the third most highly ranked public engineering school in Texas, according to U.S. News & World Report.
- The school is the third highest producer of computer science graduates in the U.S. and the fifth highest producer of electrical engineering graduates, according to the American Society for Engineering Education (ASEE).
- The school is the third highest producer of female graduates in computer science in the U.S. and the fourth highest producer of female graduates in electrical engineering.
- Jonsson School faculty members receive top recognitions from academic, professional and industry organizations, such as the National Academy of Engineering, Institute of Electrical and Electronics Engineers, Association for Computing Machinery, AVS and American Society of Mechanical Engineers.

With hundreds of high-tech, biomedical and startup companies nearby, the Jonsson School's location allows students and industry to benefit from cutting-edge research and development, top-notch internships and cooperative education programs, and highly qualified employees. These are just a few benefits of a strong alliance between industry and academe.

The strong tie that binds the University to corporations was present even at UT Dallas' inception. Some 47 years ago, the founders of Texas Instruments (TI) offered their private research and development institution to the State of Texas to become part of The University of Texas System. Sixteen years later, the Texas Higher Education Coordinating Board authorized UT Dallas' Erik Jonsson School of Engineering & Computer Science to prepare students to tackle the rapidly changing world of technology and communications.

TI remains a strategic collaborator with the University to ensure that the Jonsson School will be recognized as one of the nation's elite engineering schools. Along with the State of Texas and other organizations, TI has been instrumental in the creation of:

- "Project Emmitt" - an economic development that provided $300 million to expand and improve the Jonsson School;
- the 200,000-square-foot Natural Science and Engineering Research Laboratory;
- the Texas Analog Center of Excellence, or TxACE, which is now the largest university-based analog center in the world;
- and the Texas Biomedical Device Center, a collaborative, interdisciplinary effort led by Jonsson School faculty members to create new biomedical technology and therapies.

UT Dallas and the Jonsson School have maintained close ties with TI, but as enrollment and programs have
grown, so have strong relationships with other corporations. Industry leaders have joined with Jonsson School faculty members and students to conduct research, share resources, enhance educational opportunities and develop new technologies. Amazon, Apple Inc., AT&T, Blackberry, Broadcom, Cisco Systems Inc., Ericsson, Google, IBM, Intel, Microsoft and Qualcomm Inc. are among the leading companies in the country where our students find opportunities.

The Jonsson School is organized into six departments: Bioengineering, Computer Science, Electrical Engineering, Materials Science and Engineering, Mechanical Engineering and Systems Engineering.

The Computer Science Department was created in 1975 and became part of the Jonsson School in 1986. Today more than 1,500 students in the department are taught by an internationally recognized group of 46 tenured/tenure-track faculty and 13 experienced senior lecturers. Faculty members in the department are committed to excellence in three areas: providing the highest quality instruction; conducting leading edge research in computer science and engineering; and providing leadership and services to professional communities.

The Electrical Engineering Department was founded in 1988. The program provides high quality education and internationally competitive research for the state of Texas, focusing its efforts on areas of greatest need to North Texas industry. The department has 49 tenured or tenure-track faculty members supported by nine senior lecturers. The program specializes in the following areas: circuits and systems, communications and signal processing, control systems, digital systems, power electronics and energy systems, photonic devices and systems, RF and microwave engineering, and solid-state devices and fabrication.

The Department of Materials Science and Engineering, created in 2008 and authorized to offer doctoral and master's degrees, already has fifteen tenure-system faculty members and world-class experimental facilities. Researchers in the department work on solving major societal problems in areas such as energy, biomedical engineering and electronics. With a focus on nanoscale materials and phenomena, the research is at the cutting edge of nanoelectronics, photovoltaics, batteries and super-capacitors, atomically precise manufacturing, nanosize coatings and materials for biomedical applications.

The rapidly growing Department of Mechanical Engineering, organized in 2008, offers bachelor's and master's degrees, and jointly with The University of Texas at Arlington, doctoral degrees. The department's 19 tenure-system faculty and five senior lecturers prepare recent baccalaureate graduates and experienced mechanical engineers for advanced micro-scale and nano-scale mechanical and thermal design and development. Students in the doctoral program will create new technologies and processes for the design, manufacturing and operation of components and systems involving mechanical function at all size scales.

The Department of Bioengineering was organized in 2010 and is authorized to offer bachelor's, master's, and doctoral degrees in biomedical engineering. Graduate programs are offered jointly with the University of Texas at Arlington and UT Southwestern Medical Center. With 20 tenure-system faculty and nine senior lecturers, the program emphasizes an interdisciplinary approach in both its curriculum and research. It couples expertise in electrical, mechanical and materials engineering with a firm grounding in the life sciences.

The newest addition to the Jonsson School, The Department of Systems Engineering, offers the Master of Science degree in Systems Engineering and Management jointly with the Naveen Jindal School of Management. The research and curriculum focus is on the fundamentals of systems engineering and management, with applications in interdisciplinary areas of interest to industry, such as energy systems, healthcare systems, information and computer systems, and mechatronic systems, among others.
Degrees Offered

Masters Programs

Master of Science in Biomedical Engineering (33 semester credit hours minimum)
Master of Science in Computer Engineering (30 semester credit hours minimum)
Master of Science in Computer Science (33 semester credit hours minimum)
Master of Science in Electrical Engineering (30 semester credit hours minimum)
Master of Science in Materials Science and Engineering (33 semester credit hours minimum)
Master of Science in Mechanical Engineering (33 semester credit hours minimum)
Master of Science in Software Engineering (33 semester credit hours minimum)
Master of Science in Systems Engineering and Management (36 semester credit hours minimum)
Master of Science in Telecommunications Engineering (30 semester credit hours minimum)

Doctoral Programs

Doctor of Philosophy in Biomedical Engineering (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Computer Engineering (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Computer Science (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Electrical Engineering (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Geospatial Information Sciences (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Materials Science and Engineering (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Mechanical Engineering (78 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Software Engineering (75 semester credit hours beyond the baccalaureate degree)
Doctor of Philosophy in Telecommunications Engineering (75 semester credit hours beyond the baccalaureate degree)

Certificates Offered

- Certificate in Cybersecurity Systems (12 semester credit hours)
- Certificate in Information Assurance (15 semester credit hours)
- Certificate in Systems Engineering (12 semester credit hours)
• **Certificate in Systems Management** (12 semester credit hours)¹

1. Program offered jointly by the Erik Jonsson School of Engineering and Computer Science and the Naveen Jindal School of Management.

2. Program jointly offered by the School of Economic, Political and Policy Sciences, Erik Jonsson School of Engineering and Computer Science, and School of Natural Sciences and Mathematics.

## Faculty


**Associate Professors:** William Anderson, Leonidas Bleris, Lawrence Chung, Jorge A. Cobb, Lev D. Gelb, Vibhav Gogate, D. Todd Griffith, Fatemeh Hassanipour, Kenneth Hoyt, Giacomo (Valerio) Iungo, Golden Kumar, Cong Liu, Arif Malik, Majid Minary, Zhenpeng Qin, Benjamin Raichel, Danieli Rodrigues, Nicholas Ruozzi, Tyler Summers, Yonas Tadesse, William Vandenberghe, Walter E. Voit, Chadwin D. Young, Rym Zalila-Wenkstern, Jie Zhang

**Assistant Professors:** Rodrigo Bernal Montoya, Benjamin Carrion Schafer, Shuang (Cynthia) Cui, Xianming Dai, Yichen Ding, Jacopo Ferruzzi, Kyle Fox, Joseph Friedman, Matthew Gardner, Qing Gu, Shuang Hao, Heather Hayenga, Yang Hu, Yaqing Jin, Caroline Jones, Chung Hwan Kim, Jin Kim, Justin Koeln, Wei Li, Girgis Obaid, Jae Mo Park, Justin Ruths, II Ryu, Kaveh Shamsi, Shashank Sirsi, Victor Varner, Shiyi Wei, Guoping Xiong, Wei Yang, Armin Zare

**Research Professors:** Andrew Marshall, Hisashi (Sam) Shichijo

**Senior Lecturer:** Patrick Winter

**Professors Emeriti:** Andrew J. Blanchard, Yves J. Chabal, Bruce E. Gnade, C. Robert Helms, Duncan L. MacFarlane, William J. Pervin, Balaji Raghavachari, Don Shaw, Ivan Hal Sudborough, Klaus Truemper, Kang Zhang

**Associate Professor Emeritus:** Gerald O. Burnham

**UT Dallas Affiliated Faculty:** Larry P. Ammann, Kenneth J. Balkus Jr., Ray H. Baughman, Dinesh Bhatia, Andrew J. Blanchard, Leonidas Bleris, Carlos A. Busso-Recabarren, Yves J. Chabal, Kyeongjae (KJ) Cho, Stuart

Professors of Instruction: Ebru Cankaya,John Cole,Timothy (Tim) Farage,James Florence,Richard Goodrum,Shyam Karrah,Pushpa Kumar,Jung Lee,Randall E. Lehmann,Nhut Nguyen,Greg Ozbirn,Miguel Razo-Razo,Ricardo E. Saad,William (Bill) Swartz,Marco Tacca


Assistant Professors of Instruction: Eric Becker,Scott Dollinger,Ranran Feng,Gity Karami,Kamran Khan,Karen Mazidi,Richard K. Min,Kathleen Myers,Anarag Nagar,Benjamin Porter,Elmer Salazar,Meghana Satpute,Klyne Smith,Nidhiben Solanki

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