

Department of Electronic and Computer Engineering

Welcome

Welcome to the Department of Electronic and Computer Engineering. Networking, wireless communications, multimedia signal processing, microelectronics, microprocessors, IC design, opto-electronics, display technologies, and control and robotics all fall into the wide-ranging field. Advanced training opens up a wealth of career opportunities in industry, business, finance, government and universities worldwide.

The Department has equipped its laboratories and classrooms with state-of-the-art facilities to enable pioneering research and multimedia teaching. We have 42 full-time faculty members and over 210 research postgraduate students.

Our goal is to prepare students to become leading academics, high-quality engineers or productive managers in the ever-changing world of high technology. If you are looking for a diverse and challenging intellectual environment to increase your knowledge and skills, then join us.



Research Focus

The Department's research concentrates on two broad areas: microelectronics and information technology. These are subdivided into related sub-areas:

- **Biomedical engineering:** neuromorphic networks and engineering, bioelectronics and biochips, biomedical signal/image processing and bioinformatics, non-invasive optical technology for early detection of cancers, sensors for non-invasive quantification of important biological analytes.
- **Computer engineering:** computer architecture, man-machine systems, VLSI design, embedded systems, neural network and artificial intelligence systems, signal processing, fuzzy logic.
- **Integrated circuit and system design:** analog and digital IC design techniques, VLSI design, system-on-chip, simulation and verification tools, and semiconductor devices and modeling. Advanced topics include low-voltage low-power IC techniques, RF and mmW IC and systems, switched-capacitor and continuous time filters, data converters, image and bio-medical sensors, power management circuitry, signal processing and system architectures, and design automation.
- **Micro-electro-mechanical systems (MEMS):** basic physics, micro-fabrication technology, devices and integrated systems, MEMS packages.
- **Microelectronics/Nanoelectronics:** design and fabrication of semiconductor devices for practical applications and frontier research; semiconductor fabrication technology design and development.
- **Multimedia signal processing:** video/image/ audio/speech compression and processing MPEG4, H.264/H.265, AVS, JPEG2000, motion estimation, rate control, transcoding, error resilience/concealment, enhancement, super resolution, color, demosaicing, denoising, deinterlacing, encryption, watermarking, distributed coding, scalable coding, multiview coding, compressive sensing, subpixel rendering, GPU processing, software/hardware co-design.
- **Photonics:** silicon microdisplays, bistable liquid crystal displays, organic light emitting diodes, semiconductor laser diodes, solid state lighting, silicon nanophotonics.



HKUST at a Glance

Established: **1991**

Total students: **over 9,800**

Postgraduates: **over 3,500**

Faculty: **approx 500 (100% with PhDs)**

Schools & IPO

- **Science**
- **Engineering**
- **Business & Management**
- **Humanities & Social Science**
- **Interdisciplinary Programs Office**
- **HKUST Fok Ying Tung Graduate School**

Research Institutes: **9**

Research Centers: **44**

Postgraduate website: www.ust.hk/pgstudies

- **Speech and language processing:** robust speech recognition, emotional speech recognition, spoken language understanding, speech translation, machine translation, spoken document summarization and information retrieval, audio-visual speech recognition, speech signal processing, speaker recognition, multilingual speech and language processing, embedded speech systems.
- **System and automation:** control, robotics, manufacturing automation, discrete event systems, optimization.
- **Wireless communications and networking:** wireless communications, MIMO/OFDM systems, cognitive and cooperative communications, dynamic spectrum access, network information theory, cross-layer optimizations, distributive algorithms designs and optimizations, next generation network architecture and designs.

Faculty profiles at www.ece.ust.hk and www.research.ust.hk

Postgraduate Programs

Research Postgraduate

Master of Philosophy (MPhil) Program in Electronic and Computer Engineering

Students are required to undertake coursework and successfully research and defend a thesis. Full-time students must also complete a language course (see Requirements). The full-time program normally takes two years. Part-time is available.

Doctor of Philosophy (PhD) Program in Electronic and Computer Engineering

Students must successfully complete coursework and a thesis of significant original research. Full-time students are also required to attend seminars and complete a language course (see Requirements). All students must pass a qualifying examination set by the Department. The full-time program usually takes three to four years. Part-time is available.

Requirements

Applicants should have completed a Bachelor's degree in electronic and/or computer engineering or a related science or engineering field with high honors. If available, Graduate Record Examination (GRE) scores should be submitted as supplementary information.

For details, please refer to the Academic Records and Registration Office website (www.ust.hk/admissions).

Facilities

There are extensive facilities available to support the Department's programs. Laboratories for research and teaching encompass various areas, along with central facilities, research centers and research institutes. In addition to the University's central computing facilities, the Department has over 200 Sun workstations and over 600 PCs.

For more details, visit

www.ece.ust.hk/public/research/centers.html
www.ece.ust.hk/public/research/teaching_labs.html

Taught Postgraduate

Master of Science (MSc) Program in Electronic Engineering

The program brings students up-to-date with the technologies that are increasing the speed at which we acquire, interpret and act on information. Students may tailor the program to their individual interests. Further details at www.sengpp.ust.hk/programs/eleg/en/

Master of Science (MSc) Program in IC Design Engineering

The program seeks to train IC design engineers for Hong Kong and Mainland China and is designed for professionals and students with a Bachelor's degree in science or engineering. Further details at

www.sengpp.ust.hk/programs/icde/en/

Master of Science (MSc) Program in Telecommunications

The program is designed to equip participants with in-depth and up-to-date technical knowledge of developments in wireless systems, optical networking, broadband multimedia communications and convergence protocols. Further details at

www.sengpp.ust.hk/programs/telc/en/

The Future

The Department's postgraduates have excellent opportunities to take up senior positions in industry as electronic engineers, communication engineers, system analysts and designers, information technologists, computer project managers and many other technical and managerial positions.

Organizations employing our postgraduates include world-class local and overseas companies and institutions, such as ASTRI (HK), Ericsson (China), HKUST (HK), IBM (US), Nanyang Technological University (Singapore), National University of Singapore (Singapore), Tsinghua University (China), Imperial College London (UK), University of Texas at Dallas (US) and many more.

How to Apply

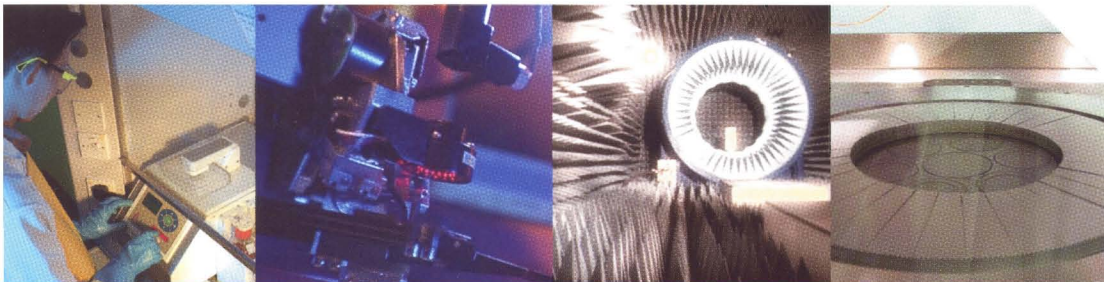
Online application and further details about our postgraduate programs, tuition fees and campus life, please visit www.ust.hk/admissions or contact:

Postgraduate Admissions Team Academic Records and Registration Office

Tel : (852) 2623 1120

Fax : (852) 2358 2463

Email : gradmit@ust.hk



Who's Who

School of Engineering

Dean: Khaled BEN LETAIEF

BS, MS, PhD *Purdue*

Chair Professor of Electronic and Computer Engineering

Department of Electronic and Computer Engineering

Head: Ross MURCH

PhD, *Canterbury*

Chair Professor of Electronic and Computer Engineering

For academic enquiries, please contact:

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Application Deadline

The application closing date for research degree programs in the Department of Electronic and Computer Engineering for 2012-13 admissions is **9 February 2012**.

