School of Engineering
Status Report '99

This brochure serves as a quick reference of basic information about the School of Engineering of the Hong Kong University of Science and Technology (HKUST). Detailed information about the University, the School, the departments and units can be found in the CD-ROM enclosed in this brochure or in the respective websites as indicated in Appendix 2.

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It has been three years since the last School of Engineering status report was published. During this period, Hong Kong has seen some significant and fundamental changes at both the mental and operational levels. In particular, the community has gradually accepted and embraced the view that Hong Kong needs to improve its competitiveness by investing in technology development and deployment, a view that underlies the setting up of our University.

Building on the foundation laid down in the founding years, our colleagues in the School of Engineering have taken the School forward in all fronts in the past three years.

To improve the teaching and learning environment for the students, we have initiated and implemented such innovative yet practical measures as a summer semester, a three-year English immersion program, a communication tutor system, an exchange program with overseas institutions, on-line self-paced IT courses, a professional development advising system, just to name a few of the major ones.

In research, on top of the excellent faculty and facilities we have already assembled, we further enhanced our capabilities with the construction of such first-rate facilities unique to Hong Kong as the Microelectronics Fabrication Facility, the Wind/Wave Tunnel Facility, the Geotechnical Centrifuge Facility, and the Controlled-Environment Testing Facility. In collaboration with the University's R&D Branch, we have established several important measures to strengthen our ties with and technology transfer to the local industry. These include the Continued and Professional Education Program to provide a technology-update path for practicing engineers, the Engineering Industrial Consortium to promote a functional partnership with the industry, and the UST Faculty Entrepreneurship Program to encourage and nurture technology startup companies in which our graduates and faculty have significant involvement.

In this report, you'll find more information - a summary in the printed version, and details in the CD-ROM - about most of these and other initiatives, and, we have also included an account of the activities and the encouraging results that they have already produced.

The continued healthy growth of China's economy provides a golden opportunity in the new millennium for Hong Kong's industry and our University. In particular, opportunities in the areas of Information Technology (both hard and soft), Infrastructure, Environment, and Manufacturing are of strong relevance to our School.
To make the most of this opportunity, we need to build up our environment as the magnet to attract the best talents from overseas and the mainland. We have continued to be able to attract excellent new and visiting faculty and staff from overseas despite increased competition from the industry in "hot" fields; and our established program to recruit top UG and PG students through the Ministry of Education has been working well. At the technology transfer level, we need to extend our reach beyond the physical border of Hong Kong. Our physical R&D bases to be built in the Pearl River Delta region, in Nansha and Shenzhen, are an important step in that direction.

As we venture into new grounds, challenges and barriers - many of which we are unaware of now - will be simply a fact of life. We just have to think smart, work hard, and anticipate and adapt to rapid changes. As a new institution with the right mindset and excellent people, we are well prepared for these challenges. Ten years from now, I am confident that we could look back and be amazed and proud of what we have done and achieved.

Ping-Keung Ko  
Professor and Dean  
School of Engineering

December 1999
The administration of HKUST follows a model which provides clear lines of responsibility and authority. The President is the University's chief executive and academic officer. Reporting to him are three Vice-Presidents. They bear responsibilities for Academic Affairs, Administration and Business, and Research and Development. There are four Schools in the University. The Deans of these four Schools report to the Vice-President for Academic Affairs. In a manner similar to that of the University, the Dean of a School is the School's chief executive and academic officer. Reporting to him are the Department Heads and Directors of Central Facilities and Research Institutes managed by that School. The two Associate Deans share the responsibilities of the Dean in the management and operations of the School.

President
Professor Chia-Wei Woo

Vice-President for Academic Affairs
Professor Shain-Dow Kung (period of service 1992 - 1998)
Professor Leroy Chang (period of service 1998 - now)

Dean of School of Engineering
Professor Ping-Keung Ko

Associate Deans of School of Engineering
Dr. Matthew Yuen (period of service 1997 - 1998)
Professor Tongpd Yu (period of service 1998 - now)
Dr. Helen Shen (period of service 1996 - 1999)
Dr. Ting Chuen Pong (period of service 1999 - now)

Heads of Departments

Department of Chemical Engineering
Professor Po-Lock Yue

Department of Civil Engineering
Professor Wilson Tang

Department of Computer Science
Professor Roland Chin

Department of Electrical and Electronic Engineering
Professor Philip Chan

Department of Industrial Engineering and Engineering Management
Professor Mitchell M. Tseng

Department of Mechanical Engineering
Professor Ping Cheng
UNDERGRADUATE STUDIES

Degree Programs
The undergraduate programs offered by the University normally require full-time attendance for three years and they all lead to honors degrees. The School of Engineering offers the following Bachelor of Engineering (BEng) degree programs:

- Chemical Engineering
- Chemical and Environmental Engineering
- Chemical and Polymer Engineering
- Civil and Structural Engineering
- Civil and Environmental Engineering
- Computer Engineering
- Computer Science
- Computer Science and Computer Engineering *
- Computer Science (Information Engineering)
- Electronic Engineering
- Electronic Engineering (Information and Communication Engineering)
- Industrial Engineering and Engineering Management
- Industrial Engineering and Engineering Management (Transportation Logistics Management)
- Mechanical Engineering
- Mechanical Engineering (Building Services)

* This program has ceased admitting students from 1999/2000.

Undergraduate Exchange Program
The School of Engineering has established undergraduate exchange programs with 21 overseas institutions including:

- University of Sydney, Australia
- University of Toronto, Ontario, Canada
- University of Waterloo, Ontario, Canada
- Ecole des Mines de Nantes, France
- Nanyang Technological University, Singapore
- University of Bath, UK
- Lehigh University, Pennsylvania, USA
- Tulane University, New Orleans, USA
- University of California (8 campuses), USA
- University of Michigan, Ann Arbor, USA
- University of Minnesota, Minneapolis, USA
- University of Pennsylvania, Philadelphia, USA
- University of Washington, Seattle, USA
- Washington University, St. Louis, Missouri, USA
These exchanges are intended to provide opportunities for students from the participating institutions to study abroad to enhance their educational experience and then return to their home institution to obtain their degrees. Credits earned are fully transferable. Students need to pay their home institution's tuition fees and are responsible for their personal and travelling expenses. HKUST Engineering students started to join the exchange program in Fall Semester 1994 and so far 53 students have studied in 13 overseas universities under the exchange program. In return, we started to have overseas students coming to HKUST in Fall Semester 1996 and 32 students from 11 overseas universities will have come by Spring Semester 2000.

Number of First Degree Graduates from 1996-1999

<table>
<thead>
<tr>
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<th>96/97</th>
<th>97/98</th>
<th>98/99</th>
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<tr>
<td>Chemical Engineering</td>
<td>52</td>
<td>64</td>
<td>51</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>93</td>
<td>111</td>
<td>121</td>
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<tr>
<td>Computer Science</td>
<td>121</td>
<td>135</td>
<td>139</td>
</tr>
<tr>
<td>Electrical and Electronic Engineering</td>
<td>167</td>
<td>156</td>
<td>153</td>
</tr>
<tr>
<td>Industrial Engineering and Engineering Management</td>
<td>50</td>
<td>82</td>
<td>76</td>
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<tr>
<td>Mechanical Engineering</td>
<td>74</td>
<td>94</td>
<td>87</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>94</td>
<td>84</td>
<td>114</td>
</tr>
<tr>
<td>Total</td>
<td>651</td>
<td>726</td>
<td>741</td>
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All departments within the School of Engineering offer the MSc, MPhil, and PhD degrees. Postgraduate degrees are available on a part-time or full-time basis. The taught programs leading to the MSc degrees are most suitable for students interested in part-time study. The MPhil and PhD are research degrees, and students in some disciplines are required to participate in research on a full-time basis. There are Interdisciplinary Programs in Master of Science in Biotechnology, Master of Science in Environmental Science and Engineering, and Master of Science in Materials Science and Engineering.

Number of Higher Degree Graduates from 1996-1999

<table>
<thead>
<tr>
<th>Department/Program</th>
<th>96/97</th>
<th>97/98</th>
<th>98/99</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MSc</td>
<td>MPhil</td>
<td>PhD</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>3</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Computer Science</td>
<td>11</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Electrical &amp; Electronic Engineering</td>
<td>7</td>
<td>28</td>
<td>5</td>
</tr>
<tr>
<td>Industrial Engineering &amp; Engineering Management</td>
<td>20</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>10</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>60</td>
<td>19</td>
</tr>
</tbody>
</table>
The Department of Chemical Engineering is offering three undergraduate programs: Chemical Engineering, Chemical and Environmental Engineering, and Chemical and Polymer Engineering. These three undergraduate programs will take in a total of 60 students. The latter two are new programs which have already been awarded provisional accreditation by the Hong Kong Institution of Engineers, and are expected to be fully accredited when the first cohort of graduates have completed their degree studies.

Our current enrollment stands at 166, with student quality on entry rising. Graduates succeeded in finding their first careers in various sectors - industry, commercial, government, and education. Our "Industry Day", a day set aside when we invite industrialists on campus to meet our potential graduates, continues to make an excellent impression on the visitors. The presentations of our students' projects are highly professional. Their communication skills all show a quantum jump from the time they first joined HKUST.

The Department now has a healthy postgraduate student body, with a current enrollment of 38. This provides on average 2.5 students per faculty. The Department is no longer solely dependent on students from the Chinese Mainland. Given that we are the only chemical engineering department in Hong Kong, we now have an increasing number of our own graduates pursuing further studies. Increasing too is the number of postdoctoral researchers coming to the Department. Many of them return to their place of origin, taking on a leadership role or establishing new research programs to continue the work they have started whilst here.

The Faculty size is at 15, with electrochemical engineering now established as a new research area. Research topics in this area cover the development of polymer-electrolyte fuel cells, gene-chips, Nickel-Hydride batteries, wastewater treatment by electrocoagulation, and electro-oxidation. In due course we expect to see these activities contributing to the improvement of the environment and the energy world. Other established areas continue to receive a healthy research funding support from Government sources, and also increasingly from industry. Intelligent control of injection molding is now receiving additional support from industry, following the success of the earlier work with the grant of a patent. The bamboo-polypropylene blend (nicknamed Bambylene) as a wood substitute has also been awarded a patent. A neat development of engineered zeolitic membranes has won the attention and support of industry. The Department is working with industrial firms in the development of optical cables for light transmission. On environmental topics, collaboration with a French company is working very well, winning a research contract from the Hong Kong SAR Government. These are all welcome signs of the Department coming to maturity, without compromising fundamental research. A major conference on Polymers, held on January 1999, organized by the Department in collaboration with others brought in 150 researchers from the Asia-Pacific region. This was followed by the Asia-Pacific Symposium on Chemical Reaction Engineering, in June 1999. Another Symposium on Sustainable Energy and Environmental Technologies will be held in December 2000. The Department will organize and play host to the prestigious ISCRE (International Symposium on Chemical Reaction Engineering) in 2002. This will be the first time this important international event moves away from USA and Europe. Not only is our research making an impact internationally, we are also gaining recognition and stature.
As Hong Kong attempts to overcome the current economic crisis, the Department of Chemical Engineering at the Hong Kong University of Science and Technology is determined to educate its students to “work harder and smarter” for the future of Hong Kong. Our faculty is fully committed to research that is at the frontiers of the discipline and interfaces with other disciplines, and the transfer of technology that is relevant to Hong Kong’s emerging knowledge based economy.

**FACULTY**

Professor and Head of Department:

Po-Lock YUE  BEng, PhD McGill

Professor:

Chi-Ming CHAN  BEng Minnesota; MS, PhD Calif Inst of Tech
(Director of Advanced Engineering Materials Facility, and Principal Investigator of Optical Fiber Lighting Cables Cooperative Research Center)

Associate Professors:

John BARFORD  BEng, PhD New South Wales
Chak-Keung CHAN  BS U of Texas (Austin); PhD Calif Inst of Tech
Ping GAO  BSc Dalian Inst of Tech; PhD Cambridge
Gordon MCKAY  BTech, PhD, DSc Bradford
Yongli MI  BS Hefei; PhD Syracuse

Assistant Professors:

Guo-Hua CHEN  BEng Dalian; MEng, PhD McGill
Furong GAO  BEng East China Inst of Petroleum; MEng, PhD McGill
I-Ming HSING  BS National Taiwan; MSc, PhD Massachusetts Inst of Tech
Xijun HU  BSc South China U of Tech; PhD Queensland
David Chi Wai HUI  BS National Taiwan; MSc, PhD Univ of Manchester Inst of Sc & Tech
John Francis PORTER  BSc Kent; MSc Bradford; PhD Bath
King-Lun YEUNG  BS De La Salle; MS, PhD Notre Dame
Jian YU  BEng Zhejiang Inst of Tech; MSc Zhejiang; PhD British Columbia

Adjunct Assistant Professor:

Terrence Fu YEE  BS Oregon State; PhD Carnegie Mellon
RESEARCH AREAS

Chemical engineering has become a highly diversified engineering and science discipline which encompasses research interests ranging from aerosol to zeolite, and from conventional petrochemical processing to multi-disciplinary areas such as materials engineering, biotechnology and environmental engineering. In addition to the fundamentals of transport, thermodynamics, kinetics and reaction engineering, research interests in the Department of Chemical Engineering focus on five areas. They are:

1. Advanced Materials
2. Bioprocess Engineering
3. Environmental Engineering
4. Electrochemical Engineering
5. Process Systems Engineering

LABORATORIES

- Advanced Materials Research Laboratories
- Air Pollution Studies Research Laboratory
- Analytical Laboratory
- Bioprocess Engineering Research Laboratories
- Electrochemical Engineering Laboratory
- Environmental Engineering Research Laboratories
- Pilot Plant Research Laboratory
- Polymer Characterization Laboratory
- Polymer Processing Laboratory
- Waste and Wastewater Treatment Research Laboratories
After the first batch of graduates in June 1995, the teaching quality of our Bachelor program was verified by the successful accreditation by the Hong Kong Institution of Engineers in December 1996. Our BEng (Hons) Degree in Civil and Structural Engineering was granted full accreditation for a period of five years until the intake year of 2000, which was the longest period granted among all departments in the School of Engineering at HKUST. Apart from the teaching quality, the intake number for our undergraduate programs is maintaining at the level of 120 per year, which makes our total current enrollment 361. In order to provide a more comprehensive undergraduate training, a new Bachelor program, BEng (Hons) Degree in Civil and Environmental Engineering was introduced in 1998. The first batch of intake for this new program was 13. This new program was also accredited by the Hong Kong Institution of Engineers in February 1999 until the year of 2000, in order to synchronize with the next accreditation for our Civil and Structural program.

In the last few years the Department has gradually built up its strong postgraduate programs. There are 75 and 67 students currently enrolled in our research programs and taught program respectively. Among the 75 research students, 21 obtained their Bachelor degree from our Department. Among the 67 MSc students, 40 of them were our own graduates. The high enrollment percentage of our own graduates in the postgraduate programs indicates their strong affiliation and appreciation for our department.

In September 1998, our Department changed its name to Department of Civil Engineering and the postgraduate programs titles were changed accordingly, i.e. MSc in Civil Engineering; MPhil in Civil Engineering, and PhD in Civil Engineering. In the same year, our Department had its own Alumni Association, which was formed by eight founding members. Three of them graduated in 1995, two in 1996 and the remaining three in 1997. The combination of founding members reflects the main objective of the Alumni Association of promoting relationship and maintaining a good network among alumni from different years.

By providing quality undergraduate and postgraduate education, and establishing an alumni association, our Department can continue to excel in the civil engineering profession and to equip our students with up-to-date technical competence, managerial skills and leadership quality to fulfill the needs of the society.

**FACULTY**

Professor and Head of Department:

**Wilson H. TANG**  BSc, MS Massachusetts Inst of Tech; PhD Stanford  
(Principal Investigator of Construction Research Center, and Acting Director of Geotechnical Centrifuge Facility)
Professors:

Paul T.Y. CHANG  BS National Taiwan; MS, PhD U of Calif (Berkeley)

Anthony R. EASTHAM  BSc, London; PhD Surrey
   (Associate Vice-President for Research and Development, and Acting Director of Transportation Institute)

Howard J.C. HUANG  BS National Taiwan; MS, PhD U of Texas (Austin)

Kenny C.S. KWOK  BE(Hons), PhD Monash
   (Director of CLP Power Wind/Wave Tunnel Facility)

Yeou-koung TUNG  BS Tamkang (Taiwan); MS, PhD U of Texas (Austin)

Adjunct Professors:

Dick W.K. TSO  BSc London; MS, PhD Calif Inst of Tech

Ben C. YEN  BS National Taiwan; MS, PhD U of Iowa

Associate Professors:

Chih-Chen CHANG  BSc National Taiwan; MS, PhD Purdue

Jun-Shiang KUANG  BSc South China Inst of Tech; PhD Hong Kong and Cambridge

Christopher K.Y. LEUNG  BSc Hong Kong; MS U of Calif (Berkeley); PhD Massachusetts Inst of Tech

Xiang-Song LI  BS Tsinghua; MS, PhD U of Calif (Davis)

Zongjin LI  BE Zhejiang; MS, PhD Northwestern
   (Principal Investigator of Advanced Cement-Based Building Products Cooperative Research Center)

Irene M.C. LO  BSc National Taiwan; MSc, PhD U of Texas (Austin)

Neil C. MICKLEBOROUGH  DipCE Hobart Tech College; MEng Carleton; PhD Tasmania
   (Director of Electrical and Mechanical Services Facility)

Charles W.W. NG  MSc Southampton; PhD Bristol
   (Associate Director of Geotechnical Centrifuge Facility)

Hai YANG  BSc Wuhan; MEng, DEng Kyoto

Visiting Associate Professor:

Robert S.C. LO  BSc Hong Kong; PhD New South Wales

Assistant Professors:

Chun-Man CHAN  BSc, MSc Massachusetts Inst of Tech; PhD Waterloo

Guanghao CHEN  BASc Zhejiang Agricultural; MEng, DEng Kyoto

Mark J. DAVIDSON  BSc, PhD U of Canterbury (Christchurch)

Mohamed S. GHIDAOUI  BEng, MSc, PhD Toronto

Lambros S. KATAFYGIOTIS  DipCE National Tech U (Athens); MS, PhD Calif Inst of Tech

Kin-Man LEE  BSc, PhD Western Ontario

Hong-Kam LO  BSc Hong Kong; MSc, PhD Ohio State

Douglas B. RIGBY  BS, MS, PhD Arizona

Lianfa SONG  BS, MS Peking; PhD U of Calif (Los Angeles)
RESEARCH AREAS

The research focus of the Department of Civil Engineering lies in two broad areas: infrastructural development and planning, and environmental and water resources studies. There are many subgroups under each of these two areas. It is likely that research focus will change as necessary to explore new areas of interest associated with the emergence of new technology.

LABORATORIES

- Concrete and Construction Laboratory
- Computer-aided Design for Tall Buildings Laboratory
- Computational Laboratory
- Environmental Engineering Research Laboratory
- Environmental Engineering Teaching Laboratory
- Geotechnical Engineering Research Laboratory
- Geotechnical Engineering Teaching Laboratory
- Intelligent Transportation Systems Laboratory
- Material Research Laboratory
- Structure Dynamics Laboratory
- Structural Engineering Laboratory
- Surveying Laboratory
- Water Resources Research Laboratory
- Water Resources Teaching Laboratory

Right: CLP Power Wind/Wave Tunnel Facility
Left: Geotechnical Centrifuge Facility
The Department of Computer Science continues to devote great effort to provide quality education for our students and to strive for excellence in high-quality, high-impact, and relevant research. At present, the Department has 420 undergraduate students, 120 postgraduate students, 29 researchers, 30 supporting staff, and 42 faculty members.

Our modern computer teaching facilities are serving over 2000 students taking Computer Science courses on campus. A new computer laboratory was established in late 1998 from a donation made by Hewlett-Packard Hong Kong for undergraduate teaching of computer graphics as well as for the training of Hong Kong secondary school teachers. Our state-of-the-art labs for research in computer engineering, artificial intelligence, database systems, graphics, video, speech and language processing, networking, and Internet technology are heavily used by our postgraduate students for their research training.

In our undergraduate programs, the Department is committed to integrating the curricula with training in problem solving, critical thinking, teamwork, and communication skills. We also enrich students' learning experience with personal academic advising, mentoring, and practical industrial training. For example, students are required to engage in faculty-supervised final-year design projects which conclude with progress and final reports, oral presentation, and project demonstration. Students are also directed to engage in team projects for valuable experience in project management and team collaboration. In addition, the Department is working with industry partners to embark on Web-based training and self-learning programs so that our students will adopt a culture of life-long learning and continuing professional education.

Success in faculty research programs and strong research funding support are helping the Department to achieve academic excellence and to maintain competitiveness and relevance. Our faculty and students are involved in many funded research projects ranging from applied research such as the development of smart card technology for supporting payment and online stock trading over the Internet, to fundamental research such as the study of dynamic allocation of resources for wireless computing and channel allocation applications. Many of our young faculty members have achieved international recognition as attested by best paper awards and editorial responsibility in top journals and conferences in their fields.

Recently, the Industry Department, the University Grants Committee, and numerous industrial partners have awarded the Department over 30 million dollars to establish a number of research centers for critical research projects. One of these research projects focuses on the development of video processing software for high-quality transmission, distribution, and coding of video signals. Another one aims at developing innovative applications for the Internet, such as voice and payment over the Internet. A third project is to develop new communication protocols for secured E-commerce transactions over mobile telephone channels.

In addition, the Department has been actively involved in local industry, community and government services. For example, in 1998 the first World Wide Web Consortium Office in China was established here in HKUST for the development of Chinese Web applications serving the Chinese-speaking communities throughout the world. In the same year, we established the Internet Business Consortium which is sponsored by recognized industry leaders for the development of Internet technology for business use in Hong Kong.
Many of us are actively involved in the development of an information technology park just north of Hong Kong, in Nansha, China, to lead the development of software industry in this region. Many students and staff are participating in various projects to help school teachers and school children in applying technology in their teaching and learning.

As we look forward to the new millennium, we anticipate great challenges to our continuous efforts to produce high quality IT professionals for Hong Kong and its region, for competitiveness and economic growth. In terms of research, our challenges remain to make further contributions to the enrichment of scientific knowledge and in conducting high impact research relevant to the society. We have built a strong foundation in both of these areas and are looking forward to the future challenges.

**FACULTY**

Professor and Head of Department:

**Roland T. CHIN** BS, PhD *U of Missouri (Columbia)*

Professors:

**Samuel T. CHANSON** BSc *Hong Kong; MSc, PhD U of Calif (Berkeley)*
(Associate Head of Department, and Director of Cyberspace Center)

**Frederick H. LOCHOVSKY** BSc, MSc, PhD *Toronto*

**Vincent Y.S. SHEN** BS *National Taiwan; MA, PhD Princeton*

**Derick WOOD** Dip, BSc, PhD *Leeds*

Adjunct Professors:

**Herbert EDELSBRUNNER** MS, PhD, *Technical U of Graz*

**Fuqing YANG** Peking

Readers:

**Jun GU** BS *U of Sci and Tech of China; PhD Utah*

**Dik L. LEE** BSc CU *Hong Kong; MSc, PhD Toronto*

**Ting-Chuen PONG** BS *Wisconsin (Eau Claire); MS, PhD Virginia Polytech Inst and State U* (Associate Dean of Engineering, and Director of Sino Software Research Institute)

Associate Professors:

**Ishfaq AHMAD** BSc *U of Eng & Tech (Pakistan); MS, PhD Syracuse*
(Director of Multimedia Technology Research Center)

**Siu-Wing CHENG** BSc *Hong Kong; PhD Minnesota*

**Mordecai J. GOLIN** BSc *Hebrew U of Jerusalem; MA, PhD Princeton*

**Mounir HAMDI** BS *Southwestern Louisiana; MS, PhD Pittsburgh*

**Andrew B. HORNTER** BMusic *Boston; MS U of Tennessee (Knoxville); PhD U of Illinois (Urbana-Champaign)*
Kamalakar KARLAPALEM  BSc Bombay; MS Indian Statistical Inst; MS Indian Inst of Tech; PhD Georgia Inst of Tech
Hongjun LU  BS Tsinghua; MS, PhD U of Wisconsin (Madison)
Jogesh K. MUPPALA  BE Osmania; MS Southwestern Louisiana; PhD Duke
Helen C. SHEN  BMath, PhD Waterloo; MSc Toronto
Dckai WU  BS U of Calif (San Diego); PhD U of Calif (Berkeley)
Dit-Yan YEUNG  BSc(Eng), MPhil Hong Kong; MS, PhD Southern California
Nevin Lianwen ZHANG  BS China U of Elec Sci and Tech; MS, PhD Beijing Normal; PhD British Columbia

Adjunct Associate Professors:
Kwok-Yan LAM  BSc London; PhD Cambridge
Harry Heung-Yeung SHUM  BEng Nanjing Inst of Tech; MPhil Hong Kong; PhD Carnegie Mellon

Assistant Professors:
Sunil ARYA  BTech Indian Inst of Tech; MS, PhD Maryland (College Park)
George BACIU  BMath, MASC, PhD Waterloo
Shuang-Han Gary CHAN  BSE Princeton; MSE, PhD Stanford
Otfried CHEONG  Univ Dip, PhD Free Univ of Berlin
Shing-Chi CHEUNG  BSc (Eng) Hong Kong; MSc, PhD London
Manhui CHOI  BSc Hong Kong; MSc, PhD U of Calif (Santa Barbara)
Kok-Wee CHAN  BSc, MSc, PhD National U of Singapore
Chung-Mong LEE  BSc, MSc, PhD Minnesota
Bo LI  BS, MS Tsinghua; PhD Massachusetts
(Co-Principal Investigator of ATM/IP Telephony Solution Cooperative Research Center)
Fangchun LIN  BS Fuzhou; MS Beijing; PhD Stanford
Brian Kan-Wing MAK  BS, Cert Ed Hong Kong; MS U of Calif (Santa Barbara); PhD Oregon Graduate Inst of Sci and Tech
Jelena V. MISIC  BS, MS, PhD Belgrade
Dimitris PAPADIAS  BS Patras; MSc Queen’s U (Kingston); PhD National Tech U of Athens
Chiew-Lan TAI  BSc, MSc Malaya; MSc National U of Singapore; DSc Tokyo
Chi-Keung TANG  BS CU Hong Kong; MPhil Hong Kong U of Sci and Tech; MS, PhD (pending) Southern California

Visiting Assistant Professor:
David ROSSITER  BSc U of Newcastle Upon Tyne; MSc, DPhil U of York (England)

Visiting Assistant Lecturers:
Lydia AYERS  BFA Calif Inst of Arts; MFA Avery Grad Sch of Arts; DMusArts U of Illinois (Urbana-Champaign)
Sylvianne KEKKONEN-MONETA  MSc U of Helsinki; DEA, PhD U de Paris-Sud-France
René van OOSTRUM  MSc, PhD Utrecht U
RESEARCH AREAS

The research interests of the Computer Science Department focus on five main areas:

1. **Foundations of Computer Science.** Current research topics include Combinatorial Optimization, Computational Geometry, Formal Languages and Machines, Graph Algorithms, Performance Analysis Techniques, and Randomized Algorithms.

2. **Artificial Intelligence.** The major research areas under investigation include Computer Vision and Image Processing, Knowledge Representation and Reasoning, Pattern Recognition and Machine Learning, Speech and Language Processing.


4. **Data, Knowledge and Information Management.** Current topics under investigation include Conceptual Modeling and Design, DBMS Internals, Distributed, Federated, and Heterogeneous Databases, Information Retrieval, Knowledge-based Management Systems, Organizational Activity Support, and User Level Facilities.


LABORATORIES

The Department of Computer Science maintains about 500 workstations and PCs. It has four Teaching Labs: one PC Lab, two Unix Labs (SPARC and Ultras) and a Multimedia Lab (HP Kayaks); four Research Labs: the Computer Engineering Lab, the Database Lab, the Graphics and Computer Music Room, the AI/Robotics/Image Processing Lab; and three specialized Project Labs: The Human Language Technology Center, the Cyberspace Center, and the Multimedia Technology Research Center. It also has the School of Engineering’s cluster of 30 SUN Ultra 30 processors and SGI Origin 2000 workstation with 72GB RAID disks interconnected by an ATM switch and various high-speed switches.
Electrical and Electronic Engineering (EEE) has evolved into an exciting high technology discipline in recent years. It covers a wide range of technologies critical to the growth of the future information-based economy: networking, wireless communications, multimedia signal processing, microelectronics, microprocessors, opto electronics, display technologies, robotics and control. Advanced training in these fields will open up vast employment opportunities in industries, business and financial institutions, government service, and universities.

The EEE Department at the Hong Kong University of Science and Technology is an exciting place for studying electrical and electronic engineering. It has amassed a talented group of faculty seeking to advance the knowledge of electrical and electronic engineering through excellence in teaching and research. The department has equipped its laboratories and classrooms with state-of-the-art facilities for cutting-edge research and multimedia teaching, striving to prepare its students to become high-quality engineers or productive managers in the ever-changing world of high-technology. A full range of courses is currently offered leading to the degrees of Master of Science (MSc), Master of Philosophy (MPhil), and Doctor of Philosophy (PhD) in Electrical and Electronic Engineering. Plans are underway to provide corresponding degree programs in Computer Engineering.

On 2 October 1991, the EEE Department opened the doors to its first class of 122 undergraduate students and 24 postgraduate students (both full-time and part-time). The Department currently has 617 undergraduate students and 183 postgraduate students. There are now 36 highly energetic teaching faculty in the Department.

Faculty research is concentrated on the two broad areas of microelectronics and information technology, which are further subdivided into seven closely-related sub-areas. Currently, research in EEE is supported by ~$46 million research grants and 80 postgraduate students are supported by postgraduate research assistantships. Additionally, approximately 65 postgraduate students are supported by postgraduate teaching assistantships.

**FACULTY**

Professor and Head of Department:

**Philip C.H. CHAN**  BS U of Calif (Davis); MS, PhD U of Illinois (Urbana-Champaign)
(Director of Microelectronics Fabrication Facility, and Principal Investigator of Advanced Electronic Packaging and Assembly Cooperative Research Center)

Professors:

**Xiren CAO**  BS Chinese U of Sci and Tech (Beijing); MS, PhD Harvard
(Co-Principal Investigator of ATM/IP Telephony Solution Cooperative Research Center)
Leroy L. CHANG  BSc National Taiwan; MSc South Carolina; PhD Stanford; DSc; NAS; NAE; CAS; Academia Sinica  
(University Professor, and Vice President for Academic Affairs)

Anthony R. EASTHAM  BS London; PhD Surrey  
(Associate Vice President for Research and Development, and Acting Director of Transportation Institute)

Ping K. KO  BSc Hong Kong; MS, PhD U of Calif (Berkeley)  
(Dean of Engineering, and Director of Institute for MicroSystems)

Hoi-Sing KWOK  BS Northwestern; MS, PhD Harvard  
(Director of Center for Display Research)

Chin-Tau LEA  BS, MS National Taiwan; PhD U of Washington

Ming-Lei LIOU  BS National Taiwan; MS Drexel; PhD Stanford  
(Director of Hongkong Telecom Institute of Information Technology, and Co-Principal Investigator of Cooperative Research Center for MPEG-4 Based Information Technology)

Adjunct Professors:

Han-Fu CHEN  Dip (Math & Mechanics) U of Leningrad (USSR)

Justin C. CHUANG  BS National Taiwan; MS, PhD Michigan State

Charles Kuen KAO  BS, PhD London; DSc CU Hong Kong, Durham & Sussex; DEng Glasgow; NAE

Charles G. SODINI  BSEE, BA Purdue; MSEE, PhD U of Calif (Berkeley)

T.J. TARN  BS National Cheng Kung; MS Stevens Inst of Tech; DSc Washington (St. Louis)

Y.Y. WANG  Peking

Associate Professors:

Jack K.C. LAU  BS, MS U of Calif (Berkeley); PhD Hong Kong U of Sci and Tech

Khaled BEN LETAIEF  BS, MS, PhD Purdue

Zeixiang LI  BS Carnegie Mellon; MS, PhD U of Calif (Berkeley)  
(Principal Investigator of Automation Technology Cooperative Research Center)

Ross David MURCH  BS, PhD U of Canterbury (Christchurch)

Li QIU  BS Hunan; MS, PhD Toronto

Johnny K.O. SIN  BS, MS, PhD Toronto

Danny H.K. TSANG  BS Winnipeg; BEng, MS Technical U of Nova Scotia; PhD Pennsylvania

Man WONG  BS, MS Massachusetts Inst of Tech; PhD Stanford

Adjunct Associate Professors:

Joseph SCHMITT  BS Case Western Reserve; MS, PhD Stanford

Mark Sze-Fong YAU  BSc Hong Kong; MS Boston; PhD U of Illinois (Urbana-Champaign)

Visiting Associate Professors:

David Zhizhang CHEN  BEng Fuzhou; MSc Southeast; PhD Ottawa

Vladimir Grigorlevic G. CHIGRINOV  MSc, DSc Russia

Yingbo HUA  BE Nanjing Inst of Tech; MSc, PhD Syracuse
Assistant Professors:

Oscar C.L. AU  BS Toronto; MA, PhD Princeton
Mansun J. CHAN  BS U of Calif (San Diego); MS, PhD U of Calif (Berkeley)
Roger CHENG  BS Drexel; MA, PhD Princeton
   (Director of Center for Wireless Information Technology)
Kwan-Fai CHEUNG  BS, MS, PhD U of Washington
Pascale FUNG  BS Worcester Poly Inst; MS, PhD Columbia
Ho-Chi HUANG  BS, MS National Taiwan; PhD U of Washington
Wing-Hung KI  BS U of Calif (San Diego); MS Calif Inst of Tech; PhD U of Calif (Los Angeles)
Ted Chi-Wah KOK  BEng City U of Hong Kong; MSc, PhD U of Wisconsin (Madison)
Howard C. LUONG  BS, MS, PhD U of Calif (Berkeley)
Philip MOK  BS, MS, PhD Toronto
Vincent M.C. POON  BSc, MPhil, PhD CU Hong Kong
Jianan QU  BS, MS Huazhong; PhD CAS
Bertram Emil SHI  BS, MS Stanford; PhD U of Calif (Berkeley)
Pengcheng SHI  BS Jiaotong (Shanghai); MS, MPhil, PhD Yale
Manhunng SIU  BS Boston; MS Calif Inst of Tech; PhD Boston
Chi-Ying TSUI  BS Hong Kong; MS, PhD Southern California
Li-Xin WANG  BS, MS Northeastern Polytech U (Xian); PhD Southern California
Bing ZENG  BS, MS U of Electronic Sci and Tech of China; PhD Tampere U of Tech (Finland)

Adjunct Assistant Professor:

Gino Tu YU  BS, PhD U of Calif (Berkeley)

Visiting Assistant Professor:

Tommy King-Yin CHEUNG  BS, PhD New South Wales

RESEARCH AREAS

The research interests in the Department of Electrical and Electronic Engineering encompass areas including:

1. Bioengineering
2. Communications and Network
3. Computer Engineering
4. Integrated-Circuit and System Design
5. Micro-Electro-Mechanical Systems
6. Microelectronics
7. Photonics
8. Robotics, Control and CAD/CAM
9. Signal, Image and Video Processing
10. Speech and Language Processing
LABORATORIES

- Advanced VLSI Design and Test Laboratory
- Analog Research/Teaching Laboratory
- Automatic Control Laboratory
- Biomedical Instrumentation Laboratory
- Broadband Network Laboratory
- Chemical-Mechanical Polishing Laboratory
- Computer Networks and System-Integration Laboratory
- Device Characterization Laboratory
- Digital Electronics and Microprocessor Laboratory
- Electro-Optics Laboratory
- Fine-Line Lithographic Laboratory
- Integrated Power Electronics Laboratory
- Machine Intelligence Laboratory
- Optical Device Characterization Laboratory
- PC CAD Laboratory
- Photonic Materials Laboratory
- Robot Manipulation Laboratory
- Robotics Teaching Laboratory
- Sensor and Instrumentation Laboratory
- Signal Processing and Communication Laboratory
- Video Technology Laboratory
- Wireless Communication Laboratory

Central Facilities, EIC Technology Units and Research Institutes closely associated with EEE

- Center for Display Research
- Center for Wireless Information Technology
- Consumer Media Laboratory
- Hongkong Telecom Institute of Information Technology
- Human Language Technology Center
- Institute for MicroSystems
- Materials Characterization and Preparation Facility
- Microelectronics Fabrication Facility
The completion of the seventh year of operations of the Department was marked with a number of milestones:

1. We have graduated 15 PhD, 33 MPhil, 82 MSc and 238 BEng students. Our postgraduate and undergraduate programs are well received by the students, the industry and overseas universities. Most of our PhD graduates are now Assistant Professors or Postdoctoral Fellows at renowned overseas universities. Many of our postgraduates and undergraduates are also affiliated to recognized companies, e.g. IBM, Microsoft, Motorola, HK Telecom and Hit. To meet the needs of today’s industry, a new undergraduate program in Transportation Logistics Management was launched in 1997.

2. The HKUST Logistics and Supply Chain Forum was established in March 1997. It fosters interaction and networking among industrial practitioners, academics and government bodies with the aim to advance the theory and practice of excellence in freight transportation, logistics and global supply chain management. Later the same year, the Forum formed alliances with the Stanford Global Supply Chain Management Forum and the Eindhoven Forum of the Eindhoven University in the Netherlands. Furthermore, the Graduate Diploma Program in Transportation Logistics Management was started in July 1999. It is targeted for transport, logistics, distribution and related sectors. Students enrolled in this program are mostly senior managers of international companies, for example DHL, UPS and Philip Morris.

3. We have sponsored a number of major conferences including International Industrial Engineering and Engineering Management Conference, primarily, for the interactions among Industrial Engineering Programs among leading Chinese universities. This conference was inaugurated by our department in 1994. Since then, it has been held annually in Xian, Beijing, Wuhan, Hong Kong, Shenzhen, and others. In addition, in July 1998, Human Aspects of Advanced Manufacturing: Agility & Hybrid Automation and Ergonomics for Global Quality and Productivity was held. Another one, the Industrial Engineering Theories, Applications and Practice was hosted by the Department in December 1998. Each of them brought over 150 researchers from Europe, USA and Asia.

4. Our faculty has been widely sought after for consultation and we have received much industrial sponsorships. Recently, the Industry Department, the University Grants Committee and a number of industrial partners have awarded the Department 35 million dollars. One of the major industrial projects aims at developing the supply chain management in the textile and apparel industry (HKTGA). It is a client-server-based Intranet application with the objective to implement an industry-wide communication infrastructure to support the global business applications of Hong Kong’s textile and apparel industry. After 3 years of development, the project was transferred at the Technology Transfer Ceremony held in January 1999 to the Quick Response Center (QRC) for further implementation throughout the industry.

5. In order to assist transforming Hong Kong companies into digital enterprises, a Product Development Environment (PDE) consortium is being organized to integrate product design information and to facilitate global project co-ordination using an internet-based portal for the smooth exchange of information at different production levels. Industrial practitioners will be provided with knowledge of
how to improve their product development capability and utilize digital information to increase the competitiveness of their companies.

**FACULTY**

Professor and Head of Department:

**Mitchell M. TSENG** BSc National Tsing Hua; MSc, PhD Purdue
(Acting Director of Advanced Manufacturing Institute)

Professor:

**Otto LIN** BS National Taiwan; MA, PhD Columbia
(Vice President for Research and Development)

Adjunct Professors:

**Hau LEE** BS Hong Kong; MSc London Sch of Econ; MS, PhD Pennsylvania

Visiting Professors:

**Martin HELANDER** MEng, PhD Chalmers U of Tech
**Kailash KAPUR** BS Delhi; MS, PhD U of Calif (Berkeley)

Associate Professors:

**Raymond K.M. CHEUNG** BS, MA York (Toronto); MA, PhD Princeton
**Neville K.S. LEE** BS U of Calif (Los Angeles); PhD Massachusetts Inst of Tech
**Chung Lun LI** BS Hong Kong; MS Stanford; EngScD Columbia
**Lining LIU** BEng, MEng Huazhong U of Sci and Tech (Wuhan); PhD Toronto

Assistant Professors:

**Vincent G. DUFFY** BS Poly U (Brooklyn); MS, PhD Purdue
**Ravindra S. GOONETILLEKE** BSc Moratuwa (Sri Lanka); MSAE Georgia Inst of Tech; MS, PhD State U of New York (Buffalo)
**Ajay JONEJA** BTech Indian Inst of Tech; MSc, PhD Purdue
**Jiyin LIU** BEng, MSc Northeastern U of Tech; PhD Nottingham
**Heloisa H.O.M. SHIH** BSc, MSc SaoPaulo; PhD Yokohama National
**Richard H.Y. SO** BS, PhD Southampton
**Fugoe TSUNG** BSc National Taiwan; MSc, PhD Michigan
**Yat-Wah WAN** BSc Hong Kong; MSc Texas A&M; PhD U of Calif (Berkeley)
**Benjamin P.C. YEN** BS National Chiao Tung; MS, MPhil, PhD Columbia
RESEARCH AREAS

The research interests in the Department of Industrial Engineering and Engineering Management cover six main areas:

1. Research and Collaboration with Shipping Industry in Hong Kong
2. Virtual Teaming and Global Management
3. Design for Mass Customization
4. Design for Cultural Diversity
5. Ergonomic Product Design
6. Footware

LABORATORIES

- Advanced Audio and Visual Laboratory
- Computer Integrated Manufacturing Laboratory
- Flexible Manufacturing Laboratory
- Human Performance Laboratory
- Industrial Automation Laboratory
- Information System Laboratory
- Manufacturing Information Technology Laboratory
- Manufacturing System Laboratory
- Material Handling Laboratory
- Multimedia Laboratory
- Precision Manufacturing Laboratory
- Quality Control Laboratory
- System Design Laboratory
- Transportation Logistics Laboratory
- Virtual Reality Laboratory
- Virtual Teaming / Concurrent Design Laboratory

Left: Flexible Assembly Facility in the Manufacturing Laboratory
Right: Foot-shoe interface pressure measurement in the Human Performance Laboratory
Mechanical Engineering is a broad-based discipline that applies technical skills to design and manufacture mechanical/thermal systems (or devices) as well as consumer goods for the purpose of improving the quality of life.

The Department of Mechanical Engineering now has 22 full-time faculty members, 280 undergraduate students, and 109 postgraduate students. The Department offers four degree programs leading to Bachelor of Engineering (BEng), Master of Science (MSc), Master of Philosophy (MPhil), and Doctor of Philosophy (PhD). The Department has been given full accreditation by the Hong Kong Institution of Engineers (HKIE).

According to the statistics of the past four years, about 50% of our BEng graduates are employed in building services and utilities companies, 30% in manufacturing, 15% in advanced studies and the remaining 5% in technical sales. To reflect local needs, a “Building Services” Program has been introduced in the JUPAS listing since 1998. During the past four years, the postgraduate program has produced 21 PhD graduates, 21 MPhil graduates, and 28 MSc graduates.

The ME Department has a reputable faculty. Many hold adjunct faculty appointments (honorary or consulting professor) in 16 universities in China and held visiting faculty appointments in U.S. and Germany. Seven faculty members are serving on the editorial boards of 22 national and international journals. Five faculty members organized six international conferences during the past 4 years.

During the academic year 1998/99, thirteen faculty members received RGC grants (totaling $8.05 million) with a success rate of 62%. The Department has received a donation of $3.3 million from the Hong Kong Jockey Club and an Industry Support Fund of $1.95 million from the Industry Department for the construction and accreditation of the Jockey Club Controlled-Environment Test Facility (see photo). Apart from teaching and research, the Facility will be used to conduct thermal efficiency tests of air-conditioners and refrigerators for local traders and manufacturers of these home appliances.

The Department was the host of 70 visiting scholars and 158 seminar speakers during the past four years. On the average, there are about 18 visiting scholars and 40 seminar speakers per year.

**FACULTY**

Professor and Head of Department:

Ping CHENG  BS Oklahoma State; MS Massachusetts Inst of Tech; PhD Stanford  
(Director of Center for Energy and Thermal Systems)
Professors:

Jay-Chung CHEN  BS Cheng Kung; MS, PhD Calif Inst of Tech
(Director of Center for Coastal and Atmospheric Research)

Pin TONG  BS National Taiwan; MS, PhD Calif Inst of Tech

Tongxi YU  BSc Peking; PhD, ScD Cambridge;
(Associate Dean of Engineering)

Adjunct Professor:

Yiu-Wing MAI  BSc(Eng), PhD Hong Kong

Associate Professors:

Chin-Tsau HSU  BS, MS National Taiwan; MS, PhD Stanford

Jang-Kyo KIM  BSc Seoul National; MS Monash; PhD Sydney

See-Chun KOT  BS U of Illinois (Urbana-Champaign); MEng, PhD Cornell

Ricky Shi-Wei LEE  BS National Taiwan; MS Virginia Polytech Inst & State U; PhD Purdue

Yang LENG  BS Chongqing; MS Michigan Tech; PhD Virginia

Matthew M.F. YUEN  BSc(Eng) Hong Kong; PhD Bristol
(Director of Technology Transfer Center, and Director of Computer Aided Design and Manufacturing Facility)

Tong-Yi ZHANG  MS, PhD U of Sci and Tech (Beijing)

Assistant Professors:

Lilong CAI  BS Tianjin; PhD Toronto

Christopher Yu-Hang CHAO  BS(Eng) Hong Kong; MS, PhD U of Calif (Berkeley)

Yong-Sheng GAO  BSc, MSc Huazhong U of Sci and Tech; PhD Birmingham

David Chuen-Chun LAM  BSc U of Calif (Berkeley); PhD U of Calif (Santa Barbara)

Steve Hon-Kuang LEE  BE Cooper Union; MS, PhD Rutgers

Huihe QIU  BEng, MEng Tianjin; PhD Erlangen-Nuremberg

Qing-Ping SUN  BS, MS Wuhan; PhD Tsinghua

Wai-Ming TO  BSc Glasgow; PhD London

Jing-Shen WU  BS U of Sci and Tech of China; PhD Sydney

Tian-Shou ZHAO  BS, MS Tianjin; PhD Hawaii

Yitshak ZOHAR  BS, MS Technion-Israel Inst of Tech; PhD Southern California
RESEARCH AREAS

The Department focuses its research in seven areas which are relevant to the economic development of Hong Kong, suitable for the university environment, and likely to yield important advances. These areas include:

1. Solid Mechanics and Dynamics
2. Materials Characterization and Processing
3. Thermal and Energy Engineering
4. Environmental and Fluid Engineering
5. Design and Manufacturing
6. Mechatronics and Control
7. Microsystems

LABORATORIES

- Automation/Manufacturing Laboratory
- CAD Research Laboratory
- Control & Robotics Laboratory
- Combustion and Fire Laboratory
- Energy and Environment Laboratory
- Materials Laboratory
- Materials Preparation/SEM
- Mechanical Fabrication Shop
- Mechanics and Materials Laboratory
- Micro Machines Laboratory
- Solid Mechanics Laboratory
- Structural Dynamics Laboratory
- Thermal Systems Laboratory
- UG Computer/Design Laboratory
- Undergraduate Laboratory
ACCREDITATION OF ENGINEERING DEGREE PROGRAMS

The Hong Kong Institution of Engineers (HKIE) undertakes professional accreditation for our engineering degree programs. It takes into account the factors which relate to the programs and influence the quality of the educational experience. These factors include the curriculum, the syllabus, the caliber of the academic staff, the entry standards, staffing levels, teaching methods, facilities, funding and method of assessment. HKIE also takes note that such programs should meet internationally recognized standards for the engineering profession.

Those who graduate with honors degrees from an engineering degree course accredited by the HKIE are deemed to have satisfied the educational component for admission to Corporate Membership of the HKIE. As HKIE is a member of the Washington Accord, the first degrees in engineering that it accredits are recognized by other signatories of the Washington Accord which include Australia, Canada, Ireland, New Zealand, South Africa, UK and USA.

HKIE has granted full accreditation to all our Engineering Undergraduate Programs for 3 to 5 years except the Computer Science Programs which will be deferred until accreditation criteria for Computer Science are developed by the HKIE.

STUDENT AFFAIRS

Engineering Students' Union
The Engineering Students' Union (ESU) has been actively involving in organizing students' activities such as the Engineering Festival, the Engineering Forum, the ESU Orientation Camp, the School of Engineering Summer Camp, the University's Outreach Day and the Open Day. For the two consecutive summers in 1998 and 1999, the ESU played a key role in organizing the student cultural exchange camps for the Association of East Asian Research Universities (AEARU).

Graduates' Career Development
The Career Center of the Student Affairs Office (SAO) provides services in career education and job placement, both as group programs and as individual guidance. The School of Engineering has organized a Career Engineering Program together with the Career Center for the graduating engineering students to help them plan for their career goals and develop the necessary job searching skills. Students can also join many other university-wide career programs such as Career Trek 2000, Helmsman Forum, Business Mentoring Forum, Pathfinder Job Search Orientation, and the PG Career Education Program. Other than these special programs, students can also participate in various recruitment talks, interview and aptitude test practicums, pre-selection exercises, career talks, and video shows.
Students Counseling Services
Student counseling services are available from the Student Affairs Office in both remedial and developmental form. The aim of counseling is to enhance the quality of life, on campus and beyond. Students with difficulties or problems can seek confidential personal consultation and guidance, while those aiming at self-understanding and psychological growth can join the group programs.

Engineering Alumni Associations
Graduates in six Engineering departments and programs have formed their alumni associations to facilitate networking, to develop relationship among their fellow alumni, and to maintain contact with their parent departments.

ACADEMIC SERVICES UNITS
Teaching and research activities in the School of Engineering are supported by a number of academic service units listed below. Detailed information of these units can be found in the CD-ROM or from their websites.

- Center for Enhanced Learning and Teaching
- Industrial Training Center
- Information Technology Services Center
- Language Center
- Publishing Technology Center
- Safety and Environmental Protection Office
- University Library

RESEARCH AND DEVELOPMENT STRUCTURE AND ORGANIZATION
Some research activities fit well into the traditional disciplinary organization, and are administered by academic departments and schools. This is especially true of smaller, basic research programs that primarily involve faculty and thesis students. For research programs that are large and require the participation of a combination of faculty and students from different disciplines, the activities are separately administered in research institutes and centers. Special major laboratory facilities are, in some instances, also separately and centrally maintained. Faculty and students are encouraged to pursue disciplinary as well as multidisciplinary or interdisciplinary research.
The R&D infrastructure at HKUST:

- **EIC:** Engineering Industrial Consortium
- **TTC:** Technology Transfer Center
- **ATC:** Applied Technology Center
- **Incubator:** HKITCC/HKUST Joint Facility
- **RandD Corp:** HKUST RandD Corporation Ltd.

The Structure of the Research & Development Branch within HKUST:

1. The Engineering Industrial Consortium (EIC) provides a mechanism allowing industry partners to directly participate in focused research areas to influence the pace and direction for the creation of new technology. It serves as a bridge between the activities of the Academic Affairs and Research & Development Branches.
2. The Technology Transfer Center identifies research activities, expertise and new technologies within the University of relevance to the needs of industry and society, and facilitates their application to business needs and real-life problems. It also assists in the attraction of industrial funding for applied research and works closely, and in collaboration, with the EIC.

3. The Applied Technology Center is a functional unit within HKUST that applies its resources to advance the development of technology through prototyping or process optimization.

4. The HKUST/HKITCC (Hong Kong Industrial Technology Center Corporation) Technology Centers and the HKUST Faculty Entrepreneurship Center are incubation facilities for new "start-up" companies. It is supported by various programs providing infrastructural, management and financial assistance to encourage and permit the direct participation of University faculty in the commercialization of new technology.

5. The HKUST RandD Corporation Limited (RandD Corp) is a Hong Kong registered, limited liability company and is wholly-owned by the University. HKUST has vested in this company, the sole right to hold and to transfer the University's ownership rights in the intellectual property generated by its faculty, students and staff. The RandD Corp provides the legal and project management framework to facilitate the commercialization of technology.

Engineering Industrial Consortium
The Engineering Industrial Consortium (EIC) is a practical partnership between industry and HKUST. It established its first technology unit in July 1997. The purpose of EIC is to allow companies to access the expertise, resources, and facilities of the School of Engineering at HKUST. By working together, industry partners and HKUST can bring innovative technologies to market faster, increase profits and develop a technology base for Hong Kong and the region. Industry partners can join as members to enjoy access to a wide range of benefits and facilities, and to work actively with one or more of EIC's technology units.

Faculty Entrepreneurship Program
The Faculty Entrepreneurship Program pursues HKUST's objective of assisting in the long term economic and social development of Hong Kong by facilitating knowledge diffusion and technology transfer to existing Hong Kong companies and stimulating the creation of technology-based start-up companies by HKUST faculty, staff and students. Two companies, the Asia Vision Technology Ltd. and the Hong Kong SuperNet, formed by engineering faculty members, have become spin-off companies. The former developed applications with advanced computerized visual recognition technology, and the latter was the first major Internet Service Provider in Hong Kong. Seven start-up companies formed by past and present engineering faculty, staff and students have also been established under the HKUST Faculty Entrepreneurship Program. Technologies of these start-up companies include secure micropayments over the Internet; web interface and technologies for customizing products; sophisticated control systems for machine tools; compact antennas for mobile communications applications; voice recognition and machine translation systems between Chinese and English; consumer electronic products for the home-of-the-future; and automated transcription systems for court and other official proceedings.
CENTRAL RESEARCH FACILITIES

The teaching and research activities in the School of Engineering are supported by the Central Research Facilities listed below. Detailed information of these facilities can be found in the CD-ROM or from their websites:

- Advanced Engineering Materials Facility
- CLP Power Wind/Wave Tunnel Facility
- Computer Aided Design and Manufacturing Facility
- Electrical and Mechanical Services Facility
- Geotechnical Centrifuge Facility
- Materials Characterization and Preparation Facility
- Microelectronics Fabrication Facility

ACADEMIC RESEARCH INSTITUTES AND CENTERS

Research Institutes

From its inception, HKUST has promoted the establishment of applied research institutes as its primary strategy for fulfilling that element of the HKUST Charter in dealing with "assisting in the economic and social development of Hong Kong". Research Institutes related to the School of Engineering are listed below. Detailed information of these institutes can be found in the CD-ROM.

- Advanced Manufacturing Institute
- Advanced Materials Research Institute
- Biotechnology Research Institute
- Hongkong Telecom Institute of Information Technology
- Institute for Environment and Sustainable Development
- Institute for MicroSystems
- Sino Software Research Institute
- Transportation Institute
INDUSTRIAL RESEARCH LABORATORIES AND CENTERS

RGC Cooperative Research Centers
While Institutes promote and facilitate interdisciplinary research collaboration, Research Centers tend to be more specialized and may be established within a single department to advance the complementary research interests of a group of faculty and researchers. The Cooperative Research Centers of the School of Engineering are listed below. Detailed information of these research centers can be found in the CD-ROM.

- Advanced Cement-Based Building Products Cooperative Research Center
- Advanced Electronic Packaging and Assembly Cooperative Research Center
- ATM/IP Telephony Solution Cooperative Research Center
- Automation Technology Cooperative Research Center
- Construction Research Center
- Cooperative Research Center for MPEG-4 Based Information Technology
- Optical Fiber Lighting Cables Cooperative Research Center

Engineering Industrial Consortium (EIC) Technology Units
The EIC has the following 17 Technology Units under the six broad areas. Detailed information of each unit can be found in the CD-ROM or in their respective websites as listed in Appendix 2.

Information Technology
- Center for Networking
- Center for Wireless Information Technology
- Cyberspace Center
- Human Language Technology Center
- Multimedia Technology Research Center

Microelectronics and Electronic Systems
- Center for Display Research
- Consumer Media Laboratory
- Electronic Packaging Laboratory
- Program Logic Center

Manufacturing
- Automation Technology Center
- Global Manufacturing Laboratory
- Human Modeling Laboratory

Advanced Materials
- Advanced Building and Infrastructural Materials Unit
CONTINUING AND PROFESSIONAL EDUCATION PROGRAMS

The School of Engineering focuses its Continuing and Professional Education Programs onto the diffusion of new technologies in Engineering and Management. This focus is reflected by the major participation of the School's faculty members and technical staff as featured speakers delivering subjects of their own active research expertise. In general, programs are designed for practicing engineering professionals at postgraduate levels and are conducted in either a shortcourse or a workshop format with industrial flavored laboratory demonstrations and hands-on exercises. Up to now, over 80 training programs have been developed, and more than 120 offerings were delivered to over 3,000 engineering professionals from over 300 commercial and industrial companies, government departments and tertiary institutions. It is our goal to develop more high quality continuing education programs in specialized technology application areas by individual EIC technology units. One example is the Graduate Diploma Program in Transportation Logistics Management offered by the Logistics and Supply Chain Forum in July 1999 with an initial intake of 32 participants.
**APPENDIX 1 — RESEARCH FUNDING**

- Mechanical Engineering
- Industrial Engineering & Engineering Management
- Electrical & Electronic Engineering
- Computer Science
- Civil Engineering
- Chemical Engineering

**Government Research Funding**

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<th>Funding Granted (HK$ millions)</th>
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<th>96/97</th>
<th>97/98</th>
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**Non-Government Research Funding**

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**Number of Projects Granted**

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**Non-Government Research Funding**

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### APPENDIX 2 — URL OF WEBSITES

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<tr>
<th>University</th>
<th><a href="http://www.ust.hk/">http://www.ust.hk/</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions, Registration and Records Office</td>
<td><a href="http://www.ab.ust.hk/arr/">http://www.ab.ust.hk/arr/</a></td>
</tr>
<tr>
<td>School of Engineering</td>
<td><a href="http://www.seng.ust.hk/">http://www.seng.ust.hk/</a></td>
</tr>
<tr>
<td>Engineering Alumni Associations</td>
<td><a href="http://www.ust.hk/alumni/aa/">http://www.ust.hk/alumni/aa/</a></td>
</tr>
</tbody>
</table>

**Engineering Departments**

<table>
<thead>
<tr>
<th>Chemical Engineering</th>
<th><a href="http://www.ust.hk/~webcceng/">http://www.ust.hk/~webcceng/</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering</td>
<td><a href="http://cesu2.ce.ust.hk/">http://cesu2.ce.ust.hk/</a></td>
</tr>
<tr>
<td>Computer Science</td>
<td><a href="http://www.cs.ust.hk/">http://www.cs.ust.hk/</a></td>
</tr>
<tr>
<td>Electrical &amp; Electronic Engineering</td>
<td><a href="http://www.ee.ust.hk/">http://www.ee.ust.hk/</a></td>
</tr>
<tr>
<td>Computer Engineering</td>
<td><a href="http://www.cpeg.ust.hk/">http://www.cpeg.ust.hk/</a></td>
</tr>
<tr>
<td>Industrial Engineering &amp; Engineering Management</td>
<td><a href="http://www-">http://www-</a> ieem.ust.hk/</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td><a href="http://www-mech.ust.hk/">http://www-mech.ust.hk/</a></td>
</tr>
</tbody>
</table>

**Central Research Facilities**

| CLP Power Wind/Wave Tunnel Facility | http://www.ust.hk/~webwwtf |
| Computer Aided Design & Manufacturing Facility (CAD/CAM Facility) | http://www.cadcam.ust.hk/cgi-bin/cadcam/index.pl |
| Electrical & Mechanical Services Facility (EMSF) | http://www.ust.hk/~webemsf |
| Materials Characterization and Preparation Facility (MCPE) | http://www.mcpe.ust.hk |
| Microelectronics Fabrication Facility (MFF) | http://www.mff.ust.hk/ |

**Research and Development**

| Applied Technology Center (ATC) | http://resq7/ccckcheng/ |
| Engineering Industrial Consortium (EIC) | http://www.seng.ust.hk/eic/ |
| RandD Corporation | http://www.ust.hk/~webvprdo/corp.html |
| Technology Transfer Center (TTC) | http://www.ttc.ust.hk/ |

**Engineering Industrial Consortium Technology Units**

| Automation Technology Center | http://www.seng.ust.hk/eic/ |
| Center for Display Research | http://www.ee.ust.hk/~cdr |
| Center for Energy and Thermal Systems | http://www.seng.ust.hk/eic/ |
| Center for Wireless Information Technology | http://cenwit.ee.ust.hk/index.shtml |
| Centrifuge Modeling for Infrastructure Construction Laboratory | http://www.seng.ust.hk/eic/ |
| Consumer Media Laboratory (CML) | http://www.cml.ust.hk/newcml |
| Cyberspace Center | http://www.cyber.ust.hk/ |
| Electronic Packaging Laboratory (EPACK Lab) | http://cadcam.ust.hk/~caepack/index.html |
| HKUST Logistics and Supply Chain Forum | http://www.ieem.ust.hk/soforum |
| Human Language Technology Center | http://www.cs.ust.hk/~hltc/ |
| Multimedia Technology Research Center | http://www.cs.ust.hk/mtrec |

**Academic Services Units**

| Center for Enhanced Learning and Teaching (CELT) | http://www.ust.hk/ceit |
| Industrial Training Center (ITC) | http://www.seng.ust.hk/itc |
| Information Technology Services Center (ITSC) | http://www.ust.hk/itsc/ |
| Language Center (LC) | http://www.ust.hk/ |
| Publishing Technology Center (PTC) | http://www.ust.hk/ptc/ |
| Safety and Environmental Protection Office (SEPO) | http://www.ab.ust.hk/sepo |
| University Library | http://library.ust.hk/ |
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Fax: 2358-1458
Web page: http://www.seng.ust.hk