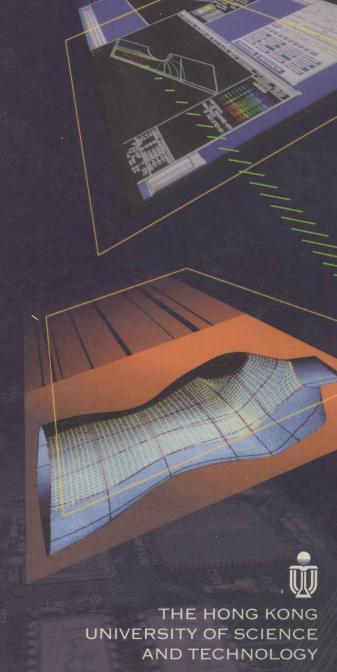
school of Engineering STATUS REPORT 95-96



SCHOOL OF Engineering STATUS REPORT 95-96

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FOREWORD



Professor Ping K. Ko, Dean of Engineering

t has been 18 months since I became Dean of the School of Engineering in May 1995. A lot has happened within this period in our school. In this report you will find detailed account of them. In essence, we have been making the transition from a fast moving start-up phase to a consolidation phase, and at the same time developing a strategic plan to better our future.

In both faculty and students, we have surpassed the 90% point of our steady-state size this year. With 185 allocated faculty, 2160 undergraduates, and over 500 postgraduates, we are the largest school and 37% of the university. In 1995, we graduated 329 undergraduates and 77 postgraduates. I am happy to learn from a survey conducted in late 1995 that the local job market for them was good. I am also keenly aware that companies from overseas have been actively pursuing our Masters and Doctorates, especially in the computer science and electronics disciplines, through direct recruiting activities in Hong Kong and/or faculty contacts. I expect this trend of global search for engineering talents to intensify in the future, and our graduates, with their state-of-the-art training and bilingual ability, should be able to compete favorably with their counterparts from anywhere in the world.

The younger members of our school, Chemical Engineering and Industrial Engineering & Engineering Management, graduated their first cohort of undergraduate students in 1995. In the past year, we have been working closely with the Hong Kong Institution of Engineers on the accreditation process for our programs. Admission of Hong Kong as a member of the Washington Accord means that our programs, once accredited, will have wide international recognition. At present, six of our seven UG programs have received either full or provisional accreditation from HKIE, in time for their graduates. For our Computer Science program – and in fact all Computer Science programs in Hong Kong – the accreditation criteria have yet to be defined by HKIE.

Two departments – Computer Science and Civil & Structural Engineering – have changed their Heads in the past year. Fortunately, both founding heads are still with us, though in other capacities. Therefore, we can continue to rely on their wisdom and advice should circumstances require. I want to take this opportunity to thank them for the numerous and enormous



contributions they have made to our school and university. They can also find comfort in the excellent successors they have helped recruit – their "brainchildren" are in good hands indeed.

e have been doing well in funding acquisition for research and development. In the RGC competitive bidding exercise in 1995, we continued to lead by significant margins, in terms of the number of successful proposals, success rate, and total funding, among engineering schools in the local institutions. As more faculty came onboard and many of our research facilities became operational, we have also been working toward strengthening our ties with local industries. Establishment of the Cyberspace centre, and new projects on garment technology, pattern recognition, microelectronics, electronic packaging, all supported by the Industry Department, are fruits of our effort.

On the teaching/learning front, we are embarking on new initiatives to provide a better learning environment for our students. The summer semester, which aims at providing scheduling flexibility for students who need it, is one of them. About half of our students participated in the first summer school held in an 8-week period in July/August this year.

Other initiatives include broadening the exchange student program with overseas universities for capable students, and a new advising

system that merges advising with professional development counseling and training of communication skills. The new advising scheme, in particular, illustrates the direction we believe engineering education is heading. The Internet and other electronic media, as information sources, will become increasingly important supplements (in some cases, replacement as well) to conventional classroom lectures. What they can't provide (and replace) is the person-to-person interaction. Engineering education has to respond by introducing more elements of the apprenticeship system; and this is a positive change we should all embrace.

Ping Keung Ko
Professor and Dean
School of Engineering

December 1996

ADMINISTRATION AND ORGANISATION

he 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

Dean of School of Engineering

Professor Ping-Keung Ko

Associate Deans of School of Engineering

Dr. Neil Mickleborough Dr. Helen Shen

Head of Department of Chemical Engineering

Professor Po-Lock Yue

Head of Department of Civil and Structural Engineering

Professor Wilson Tang

Head of Department of Computer Science

Professor Roland Chin

Head of Department of Electrical and Electronic Engineering (Acting)

Professor Philip Chan

Head of Department of Industrial Engineering and Engineering Management

Professor Mitchell M. Tseng

Head of Department of Mechanical Engineering

Professor Ping Cheng



From left to right: Prof. Mitchell Tseng/DH, Industrial; Prof. Ping Cheng/DH, Mechanical; Prof. Philip Chan/DH, Electrical & Electronics; Prof. Roland Chin/DH, Computer Science; Dr. Helen Shen/Associate Dean; Prof. Wilson Tang/DH, Civil & Structural; Prof. Po-Lock Yue/DH, Chemical; Prof. Ping K. Ko/Dean; Dr. Neil Mickleborough/Associate Dean



Dr. Neil Mickleborough, Associate Dean



Dr. Helen Shen, Associate Dean

UNDERGRADUATE STUDIES



▶ Engineering Festival '95 — Mechanical Engineering Demo

EDUCATIONAL PHILOSOPHY

The undergraduate programmes offered by the University involve students attending full-time for three academic years. The University curriculum is founded on a credit-based system, and all undergraduate degrees are honours degrees. The undergraduate curricula in the School of Engineering are broad-based with special attention given to laboratory skills, computer applications, and design techniques. All engineering undergraduate students are required to take specialist courses in various engineering disciplines, both in and outside their departments. Together these reflect the fundamental facts that the mission of engineering is to produce and synthesise, and that engineering practice must be compatible with economic realities and the social environment.

In keeping with the philosophy of providing specialist training with a generalist outlook, engineering undergraduate students take at least 12 credits (usually 4 courses) in Humanities and Social Science, and additional elective courses in both the School of Science and the School of Business and Management.

The School also offers industrial training to provide students with a series of relevant, well-planned, and inter-related engineering experiences in an industrial atmosphere. The training aims to give students a broad and structured understanding of engineering practices, and help them satisfy the training requirements of the Hong Kong Institution of Engineers (HKIE).

The Engineering Summer School was offered to Secondary 7 students in summer 1996, which allowed them to get a head start in their programme of choice. Students were able to accumulate credits and apply them towards their Engineering degree requirements if admitted to the School. The Summer School was established with the aim of giving students more time to cope with the demands of their academic programme as well as allowing very able students to use the flexibility to take extra courses and a much more aggressive schedule.



▶ The Popsicle Stick Bridge Design Competition of the 1995 Engineering Summer Camp for Form-6 students

UNDERGRADUATE EXCHANGE PROGRAMME

The School of Engineering has established undergraduate exchange programmes with several overseas institutions, such as University of Pennsylvania, University of Michigan and University of Washington in St. Louis and is in active negotiation with a number of other institutions. These exchanges are intended to provide opportunities for students from the participating institutions to study abroad and then return to their home institution to obtain their degree. The international exposure enhances the educational experience of students and provides them with an advantage in their future career development.

DEGREE PROGRAMMES

| Degree | Title of Course | Abbreviated Title | Course Code |
|--------|---|----------------------|----------------|
| BEng | Chemical Engineering | CENG | E320 |
| BEng | Civil and Structural Engineering | CIVL | E330 |
| BEng | Computer Science | COMP | E340 |
| BEng | Electronic Engineering | ELEC | E350 |
| BEng | Industrial Engineering & Engineering Management* | IEEM | E361 |
| BEng | Mechanical Engineering | MECH | E370 |
| BEng | Computer Engineering | CPEG | E380 |
| | | | |

^{*} This programme is previously known as the Department of Industrial Engineering.

Undergraduate Enrolment

| Dept. | 1996-97 Intake | 1995-96 Intake (1st year Students) | 1994-95 Intake (2nd Year Students) | Total Current Enrolment |
|--|-------------------|---|---|-------------------------------|
| Chemical Engineering | 55 | 62 | 55 | 172 |
| Civil & Structural Engineering | 119 | 124 | 97 | 340 |
| Computer Science | 142 | 135 | 126 | 403 |
| Electrical & Electronic Engineering | 155 | 170 | 168 | 493 |
| Industrial Engineering & Engineering Management | 70 | 67 | 52 | 189 |
| Mechanical Engineering | 89 | 91 | 81 | 261 |
| Computer Engineering | 114 | 92 | 98 | 304 |
| Total | 744 | 741 | 677 | 2162 |

DEGREE REQUIREMENTS

For graduation purposes students require a total of 100–105 course credits, as specified for each programme. A credit is approximately equivalent to the work required for one lecture hour per week for one semester. For complete programme requirements, please see the University Academic Calendar and the University's undergraduate prospectus.

The School has 518 students graduating from all her undergraduate programmes at the end of the academic year 95/96. These graduates come from the Departments of Chemical Engineering, Civil and Structural Engineering, Computer Science, Electrical and Electronic Engineering, Industrial Engineering & Engineering Management and Mechanical Engineering.

Undergraduate Programme Course Credit Requirements for 96/97

| Programme | Engineering | | Science | Business & | Humanities & | Language | Elective | | Total |
|-------------|---------------|---------------|---------|------------|----------------|----------|----------|------|--------|
| | Within Dept. | Outside Dept. | Science | Management | Social Science | Lunguage | Free | Engg | , otal |
| CENG | 57 | 6 | 20 | 6 | 12 | 3 | | | 104 |
| CIVL | 61 | 6 | 8 | 7 | 12 | 3 | | 8 | 105 |
| COMP | 54 | 7 | 12 | 6 | 12 | 3 | 6 | | 100 |
| ELEC | 66 | 5 | 10 | 6 | 12 | 3 | | | 102 |
| IEEM | 50 | 18 | 16 | 6 | 12 | 3 | | | 105 |
| MECH | 67 | 10 | 6 | 6 | 12 | 3 | | | 104 |
| CPEG | 71 | 0 | 10 | 6 | 12 | 3 | | | 102 |
| Minimum Cre | dits Required | | 6 | 6 | 12 | | | | 100 |

Students are required to take a total of at least thirty-six credits outside the student's major department.



University Open Day

ADMISSION REQUIREMENTS

To qualify for admission to the University, applicants must:

- normally be at least 17 years of age by the first day of the academic year to which they are seeking admission;
- meet the general entrance requirements of the University and the requirements of the particular programme or programmes for which they are applying; and
- apply on the prescribed form before the application deadline.

Entry to an undergraduate programme of study requires prospective students to satisfy both the general University and specific departmental entrance requirements. Applicants may be requested to attend personal interviews and/or take additional tests to be administered by the University. Interviews are designed for the purpose of providing further assessment of the applicant's motivation, aptitude and overall suitability for the chosen field of study.

General Admission Requirements

The genral University requirements for entry in the 1997–98 academic year include ALL of the following:

- Hong Kong Certificate of Education Examination (HKCEE) passes in at least seven subjects at the first and if necessary second attempt, of which
 - i. at least five must be passed at a single sitting; and
 - ii. three must be Mathematics, English Language (Syllabus A or B), and either Chinese or an alternative language
- Hong Kong Advanced Level Examination (HKALE)
 - i. passes at the same sitting in
 - a. either one Advance Level (AL) subject plus two Advanced Supplementary (AS) subjects, or two AL subjects; and
 - either AS Chinese Language and Culture(1)(2) ,or AS Liberal Studies; and
 - ii. pass in AS Use of English (UE)(3)

- (1) Alternatively, a pass in AL Chinese Literature is acceptable in lieu of AS Chinese Language and Culture, in which case the student is required to pass in addition either (i) two AL subjects; or (ii) one AL subject plus one AS subject; or (iii) three AS subjects.
- (2) For applicants who use an alternative language, rather than Chinese, to satisfy the language requirements in the HKCEE, an AS subject may be used as a substitute for the Chinese Language and Culture requirement.
- (3) All students admitted with a UE grade below C will be required to attend and pass a non-credit bearing English language enhancement course during the first year of attendance.

Entrance Requirement Equivalents

Alternatively the general entrance requirements may be satisfied by obtaining one of the following qualifications:

- i. General Certificate of Secondary Education/General Certificate
 of Education at Ordinary Level –
 passes in at least seven subjects at the first and if necessary
 secondary attempt, including Mathematics, English
 Language and a language other than English, with five of
 the subjects passed at a single sitting; and
 - ii. General Certificate of Education at the Advanced Level/Advanced Supplementary Level –
 passes at the same sitting in 1 AL plus 3 AS subjects; or 2 AL subjects plus 1 AS subject; or at least 3 AL subjects.
- at least one year's successful full-time study or equivalent in a bachelor's degree programme at a university or tertiary institution recognised by this University;
- a professional diploma, higher diploma or higher certificate from a polytechnic or recognised tertiary college in Hong Kong;
- an International Baccalaureate.

Notwithstanding the above, the University may recognise other qualifications, or successful study at another recognised institution. In assessing these qualifications, the University will ensure that such applicants have an educational background equivalent to that required of JUPAS candidates. Proficiency in English is also a consideration.

Mature Applicants

Applicants who do not satisfy the general or departmental entrance requirements of the University but are aged 25 or over by the first day of the academic year in which admission is sought may be granted exemption from the entrance requirements of the University provided they can demonstrate aptitude and suitability for admission to a particular programme of study.

Departmental Entrance Requirements for Undergraduate Programme

| Programme | Departmental Entrance Requirements | | | |
|--|--|--|--|--|
| BEng in Chemical Engineering | 3 AL subjects; or 2 AL subjects plus 1 AS subject (Subjects must be chosen from Applied Mathematics, Biology, Chemistry, Engineering Science, Mathematics and Statistics, Physics, and Pure Mathematics) | | | |
| BEng in Civil and Structural Engineering | AL Pure Mathematics and AL Physics/Engineering Science, plus 1AL/2AS subjects. | | | |
| BEng in Computer Engineering | AL Pure Mathematics plus 1AL/2AS subjects. One of these subjects must be AL/AS Physics or AL Engineering Science. | | | |
| BEng in Computer Science | AL Pure Mathematics plus 1AL/2AS subjects. | | | |
| BEng in Electronic Engineering | AL Pure Mathematics plus 1AL/2AS subjects. One of these subjects must be AL/AS Physics or AL Engineering Science. | | | |
| BEng in Industrial Engineering and Engineering Management | 2 AL subjects; or 1 AL subject plus 2 AS subjects. (Subjects must be chosen from Applied Mathematics, Biology, Chemistry, Computer Applications, Design and Technology, Engineering Science, Mathematics and Statistics, Physics, and Pure Mathematics.) | | | |
| BEng in Mechanical Engineering | 2 AL subjects; or 1 AL subject plus 2 AS subjects (must include Pure Mathematics, and Physics/Engineering Science) | | | |

In addition to the general requirements, applicants for 1997–98 entry must also satisfy entrance requirements specific to their desired programmes of study. Unless otherwise specified, AS level subjects referred to below exclude Use of English, Chinese Language and Culture, and Liberal Studies(1).

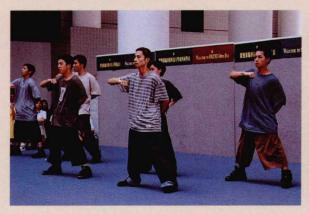
Application for Admission

Applicants who are seeking admission based on the results of their Hong Kong Advanced Level Examination results should apply via the "Joint University Programmes Admission System" (JUPAS). This system enables applicants to apply on the strength of their HKALE results for admission to the undergraduate programmes in UGC institutions. Application details may be obtained from the JUPAS Guide published by the JUPAS Office every year.

Applicants who are applying for admission on the basis of qualifications other than HKALE results, including non-local applicants, should apply to the University for direct admission. Applications for admission in September should reach the University by 31 December of the previous year.













Il departments within the School of Engineering offer MSc, MPhil, and PhD degrees. Postgraduate degrees are available on a part-time or full-time basis. Taught programmes leading to MSc degrees may be the most suitable for students interested in part-time study. Both MPhil and PhD are research degrees, and students in some disciplines are required to participate in research on a full-time basis.

POSTGRADUATE STUDIES



Postgraduate Enrolment 1996 - 1997 (Full-time)

| Dept. | MSc | MPhil | PhD | Total |
|---|-----|-------|-----|-------|
| Chemical Engineering | 0 | 14 | 7 | 21 |
| Civil & Structural Engineering | 1 | 13 | 24 | 38 |
| Computer Science | 8 | 48 | 20 | 76 |
| Electrical & Electronic Engineering | , 1 | 79 | 46 | 126 |
| Industrial Engineering & Engineering Management | 1 | 15 | 24 | 40 |
| Mechanical Engineering | 5 | 17 | 27 | 49 |
| Total | 16 | 186 | 148 | 350 |

Postgraduate Enrolment 1996 - 1997 (Part-time)

| Dept. | MSc | MPhil | PhD | Total |
|---|-----|-------|-----|-------|
| Chemical Engineering | 7 | 1 | 0 | 8 |
| Civil & Structural Engineering | 50 | 1 | 6 | 57 |
| Computer Science | 21 | 8 | 10 | 39 |
| Electrical & Electronic Engineering | 23 | 4 | 8 | 35 |
| Industrial Engineering & Engineering Management | 56 | 4 | 1 | 61 |
| Mechanical Engineering | 22 | 3 | 5 | 30 |
| Total | 179 | 21 | 30 | 230 |