FAQ on the Engineering Undergraduate Programs

About Engineering

1. **Can you tell me what engineering is?**

   Engineering involves the acquisition and application of scientific, mathematical, economic, social, and practical knowledge to solve problems in our daily lives. Engineers are therefore problem-solvers who make things work more efficiently and effectively at lower costs. Engineering helps to improve our modern life, as exemplified by great engineering inventions such as computer chips, satellites, medical devices and renewable energy technologies, etc. The work of engineers can be experienced in all parts of our daily lives which include making a call with mobile phone, playing internet games, managing investments, shopping online, riding on a vehicle, walking across a bridge and even wearing body lotion. Engineering is everywhere in the world around us.

   To learn about the various disciplines of engineering, click here.

2. **What is the difference between Science and Engineering?**

   Scientists explore the laws of nature to discover new knowledge. Engineers apply the knowledge drawn from science to solve practical problems. Scientists explain observed phenomenon and prove something right or wrong to make scientific discoveries. Engineers apply the scientific and math knowledge to solve problems faced by humanity and improve their quality of life, through a creative, systematic and exciting process.

3. **Who will be suitable to be an engineer?**

   All students who love science or engineering, and eager to solve problem for a better living of human beings.

4. **How is studying in HKUST School of Engineering different from other engineering schools in Hong Kong?**

   Unique features of HKUST:

   a. HKUST is consistently ranked among the BEST universities in the field of Science and Technology

   More about HKUST engineering rankings

b. HKUST School of Engineering (SENG) is recognized for its research and education excellence with significant impact locally and globally

c. Engineering students will take a new "Engineering PLUS" (**P**reparing **L**eaders for **U**ltimate **S**uccesses) curriculum, which is designed to enhance students' academic and personal development, nurture their professional and career development, and broaden their community and international outlook

d. Internationalization – HKUST boosts its internationalized student population with its comprehensive exchange programs and non-local student intake

The Engineering Curriculum at HKUST

5. How are the credits distributed in the Engineering program?

In general, most courses carry 3 to 4 credits. When you take a course and meet its requirement (e.g. get a pass in the exam), you will earn the credits. In the Engineering program, students have to complete a minimum of 120 credits for graduation. Dividing 120 credits into 4 years, students will take 30 credits each year or 15 credits each semester on average.

Among the 120 credits, the University Common Core curriculum will take up 36 credits. On average, the engineering introductory courses and fundamentals will take up about 30 credits. The major program will take up about 40 - 50 credits. If students wish to take a minor program, it will take up 18 credits (6 subjects). They can also earn credits through research or other enrichment programs, e.g. Undergraduate Research Opportunities Program (UROP), experiential learning courses, etc.

6. Can I catch up with the curriculum in university?

Most of our students can catch up with the university curriculum without problem. We will provide professional advising for students who encounter academic difficulties.

7. If I do not study M1/M2 in HKDSE, will it be difficult to pick up the engineering courses?

We understand that students' academic preparation can be quite diverse and the subjects they have followed in pre-university studies can be at different levels. We therefore prepare a range of fundamental courses so as to bring up students' academic attainments to the same level at the end of the first year of study. By this, students will be able to follow their major programs on equal footing.

8. During my first year without a major, what courses should I take and who should I ask for advice as I don't belong to any department?

During the first year, students should follow the Engineering fundamentals which comprise Engineering introduction courses, basic science courses, language courses, computing courses and the University Common Core. To offer professional advices and counseling to engineering

students, SENG has exclusively established the Centre for Engineering Education Innovation (E^{2}I) to take care of all first-year students.

9.   If I take a civil engineering course in Year 1, but later get admitted to Mechanical Engineering program, will this course still be counted (and to satisfy what requirement, school or university)? I'm worried that I have a certain major in mind, take their courses as soon as I get in, but end up wasting my time if I don't get into that major.

Students may choose different engineering introduction courses to get a taste of different engineering disciplines in their 1st year of study. Regardless of which engineering major to pursue in the 2nd year, the credits will be counted towards the credit requirements for graduation. To help students plan their own study, there is a recommended pathway students may refer to and customize a study path to meet their own needs.

10.   What is the meaning of "University Common Core Courses" and "double counting with University Common Core Courses"?

To broaden the coverage of university studies, there are University Common Core requirements which consist of 36 credits of general education. For more details, please refer to the Undergraduate Core Education website. "Double counting with University Common Core Courses" means taking one course to fulfill both University Common Core requirement and major requirement.

11.   What is the difference between Computer Science, Computer Engineering and Electronic Engineering?

Computer Science – Emphasis on computer structure and applications as well as all kinds of software and web technologies development. Computer Engineering – Interface between the software and hardware models. Electronic Engineering – Hardware design as well as modern technologies used in different electronic products and network systems cooperating with computing technology.

12.   What is the difference between the Data Science and Technology Program and the Decision Analytics Program?

The Data Science and Technology program aims to equip students with a solid foundation in various mathematical and statistical tools, machine learning algorithms, data analytical skills and computing technologies which enable them to make sense of massive data obtained from various sources. It is suitable for students who have a keen interest in big data analytics and applying them to real life situations. The Decision Analytics program equips students with portable decision analytic skills and domain specific expertise in the knowledge economy. Decision analytic skills include statistics, machine learning algorithms, simulation, stochastic processes, and optimization. Students take elective courses in domain specific areas of the knowledge economy to add significant value to many industries including financial and consulting services among others. While both programs have statistical learning in common, the focus of the data science and technology program is on big data and computing

technologies, while that of decision analytics is on modelling and decisions supported by optimization and data.

13.   If I wish to study environmental engineering, where can I fit in?

Environmental engineering is an interdisciplinary area. You can pursue the study of environmental engineering with the following three major programs, which are available for students' selection upon completion of their first year of study. *(Note: Students of all Schools, not just SENG, can apply for BSc in Environmental Management and Technology.)*

a.   **BEng in Civil and Environmental Engineering** *(offered by Department of Civil and Environmental Engineering)*

This program provides a sound and long-lasting foundation on civil engineering with a particular focus on environmental technology. Graduates of this program are qualified to join the Hong Kong Institution of Engineers (HKIE) Scheme "A" training and become professional engineers in Environmental discipline, Civil discipline or other related disciplines.

b.   **BEng in Chemical and Environmental Engineering** *(offered by Department of Chemical & Biological Engineering)*

This program enables students to understand various industrial processes and realize where environmental control measures can be implemented. Graduates of this program are qualified to join the HKIE Scheme "A" training and become professional engineers in Environmental discipline, Chemical Engineering discipline or other related disciplines.

c.   **BSc in Environmental Management and Technology** *(offered by Interdisciplinary Programs Office)*

This program encompasses sustainable development, environmental management, environmental law and regulation. This is not an engineering program and is not meant for students who aspire to be professional engineers after graduation.

14.   What is the difference between double major and dual degree?

Dual degree means two degrees while double major is one degree with two majors. Currently, HKUST offers one Dual Degree Program, which takes students 5 years to finish. Upon completion of the program, students are awarded two degrees – a Bachelor of Engineering (BEng) or Science (BSc), plus a Bachelor of Business Administration (BBA).

For double major, on the other hand, students are expected to finish two majors in a single degree in 4 years. Students who wish to take a 2nd major will need to achieve a certain level of academic performance and develop a feasible study plan, which enable them to fulfill the requirements of 2 majors within 4 years. Please also refer to Q.21 below.

15. **Besides the Dual Degree Program in Technology and Management, what other non-engineering disciplines are available to engineering students at HKUST?**

All undergraduate programs offered by the Interdisciplinary Programs Office at HKUST are open to engineering students, e.g. Risk Management and Business Intelligence, Environmental Management and Technology, etc. Students from any School can apply to enrol into these programs through major selection that takes place at the end of their first year of study. Students may refer to IPO's admission FAQ for more information.

16. **Besides programs available at HKUST, is there any chance for me to attend degree programs of other universities during my study?**

HKUST School of Engineering is very forward-looking and always seeks to broaden its students' engineering education. Recently, it has partnered with the University of Exeter, UK, to provide an accelerated pathway for engineering students to pursue legal courses during their engineering programs. Upon completion of the collaborative program, students can earn a degree in BEng/BSc in engineering or computer science from HKUST, and a law degree from the University of Exeter. For more details of this program, please refer to the School of Engineering website.

17. **When can I apply for a minor? Is acceptance guaranteed?**

Our Engineering program allows flexibility and room for students to take minors or even additional major(s). Students can declare a minor program starting from the 2nd year of study (but there may be variations in timeline for some minor programs). Some minor programs will have specific enrollment conditions which would be listed in the program curriculum.

Selecting My Major Department

18. **After getting into SENG, what are the earliest and latest time I can apply for a particular major? If I am granted a substantial number of transfer credits, is it possible for me to declare my major before I complete Year 1?**

Students will select their major departments at the end of the 2nd semester. There is no fast track for any student as we see it necessary for students to grasp a good understanding of various engineering disciplines during their first year of study before deciding on their choice. We would greatly value students' choices and interest. It is our target that around 90% of the students will get one of the 1st or 2nd departmental choices. At the same time, students of all Schools can also choose any Interdisciplinary Programs Office (IPO) major. These students will be assessed by IPO, including interviews.

19. **What are SENG's criteria in accepting students into major programs and what is the quota?**

We do not only consider the students' preference, but also make use of the first year to help students to find out their own interests and passion so that they can make informed choices of the majors, rather than just following the crowd. To allow as many students as possible to

enter their preferred department, we would open up the largest number of places in each program at the departments' full capacity.

20. **How is the 1st year study relevant to my favorite department?**

Students will need to take Engineering fundamentals which comprises Engineering introduction course, basic science courses, language courses, computing courses and the University Common Core. These courses, including engineering introduction courses, help broaden students' general education and also let students have a taste of different engineering majors. The students can better understand their strength and interest in studying these courses which help students make an informed choice during department selection.

Among all subjects taken in Year 1, departments will consider the best attained subjects for assessment. The subjects considered may vary among departments.

21. **Do different majors require the same set of courses in Year 1 studies? If not, how many courses are different and what are the same?**

While there is a common set of courses offered to Engineering Year 1 students, students have flexibility in deciding their pattern of study by choosing their preferred courses from the list. They are not required to follow a fixed pattern in each semester.

22. **Can I choose more than 1 major after the first year of study, say Science and Engineering? If so, which school should I choose?**

Students who wish to broaden their study can choose to do additional majors or minors. Additional major can be from the same School or another School. No matter how many additional majors a student has completed, s/he will nevertheless be awarded one single degree only (e.g. BEng or BSc).

Besides, the School of Engineering offers a dual major program in BSc with the Science School. Students in that program will have a first major in Computer Science and can select a second major from School of Science, upon the approval of the major offering departments. On graduation, the student will be awarded a single degree (i.e. BSc) with two majors. Students who entered the Science School with the first major from a Science department can also join this double major program upon approval from the departments that offer the major.

23. **I heard that the Dual Degree Program admits students directly from JUPAS. Are there still any places for me if I join the School of Engineering in the first year and want to enrol into Dual Degree program in the 2nd year?**

No worry, the Dual Degree Program Office has reserved sufficient places for major selection. Students who enter HKUST in any of the participating Schools (e.g. SENG) through school-based admission can still apply for the Dual Degree Program through major selection at the end of their first year of study.

24.   **Can I transfer from SENG to Business School later? What procedure/ grades are needed?**

After students join a major department, they may apply for program transfer should they wish to take other major programs. The transfer criteria will be determined by the receiving School/department.

Co-curricular Activities

25.   **What is the percentage of engineering students going to exchange?**

In 2017-18, about 40% of engineering students went to exchange, which is an extremely encouraging figure. The School has established exchange programs with 120+ universities from 20+ countries and regions around the world. Students have the flexibility to participate in various enrichment programs including the overseas exchange programs. Besides regular terms, students can also choose to participate in credit-bearing exchange at one of the School's exchange partners in the summer term. In addition to no-fee exchange, HKUST has also developed a number of fee-paying summer study abroad programs to suit the interest and needs of students.

26.   **Do I have the chance to take up an internship during my study?**

Students usually go for internship during Year 2 or Year 3 summer, either in Hong Kong or overseas. Some students may also choose to take leave from study during term time to take up internships. To promote internship among students, the School of Engineering has established the Center for Industry Engagement and Internship in 2012, which provides a platform to facilitate students' exposure to industrial experience and internship opportunities.

27.   **What is experiential learning?**

Experiential learning is a new pedagogical approach by which students reinforce and enrich their knowledge and skills by hands-on experience through activities like design projects, competitions, community service, etc. The School of Engineering is a pioneer in experiential learning. Our robotics teams, which are organised under the auspices of the Center for Global and Community Engagement (GCE) have had their presence in many well-known robotics competitions, locally and internationally. They are the 9th time champion of the ABU Robocon – HK Contest, which is a major annual robotics competition in HK.

With a strong belief in the educational value of experiential learning, the School launched an innovative experiential learning program – the USEL Program *(Undergraduate Student-initiated Experiential Learning Program)* a few years ago. USEL provides a platform for students to try out project ideas of their own and realise their dreams through the support of designated maker-space that are fully furnished with equipment and offer 24-hour access to eligible users, and the guidance of our professors.

Many of our Departments/Units also offer credit-bearing experiential learning courses on a wide range of themes to cater for different students' interest, e.g. electric vehicles, food

science, mobile app development, environmental quality control, aerospace engineering, health care (under the auspices of SIGHT), etc.

Career Prospects

28. **How soon can I become a qualified professional engineer after I graduate?**

Students can become a qualified professional engineer 4 years after their graduation the soonest. After students obtain a recognized degree, they need to gain 3 years of formal training under the Graduate Scheme "A" Training of The Hong Kong Institution of Engineers. Students will learn through practical experience in their companies under this scheme. After this, students need to gain 1 year of responsible experience. After the 4 years of training and experience, students can then apply for Professional Assessment to become a qualified professional engineer.

Professional skills of engineering are worldwide applicable. All engineering and computer science programs offered by HKUST are accredited by the Hong Kong Institution of Engineers (HKIE). Through the Washington Accord and the Seoul Accord, HKUST BEng degrees are also widely recognized around the world, including the US, UK, Australia, Canada, New Zealand, Singapore, etc., thus opening up an international spectrum of jobs and career prospects.

29. **What is the career prospect for each of the engineering program/discipline?**

Our graduates take up a wide variety of positions across many industries. Students may learn about the career prospects of each discipline in greater details from the following:

BEng in Bioengineering
BEng in Chemical Engineering
BEng in Chemical & Environmental Engineering
BEng in Sustainable Energy Engineering
https://cbe.ust.hk/academic/download/cbe.pdf

BEng in Civil Engineering
BEng in Civil & Environmental Engineering
http://www.ce.ust.hk/intro/prospects.html

BEng in Computer Engineering
http://www.cpeg.ust.hk/eng/admission/career_prospects.html

BEng in Computer Science
BSc in Computer Science
http://www.cse.ust.hk/ug/admissions/career/opportunities/

BSc in Data Science and Technology
http://dsct.ust.hk/about

BEng in Decision Analytics
https://www.ieda.ust.hk/eng/detail.php?catid=3&sid=59

BEng in Electronic Engineering *(Please scroll down to the paragraph on "Career Prospects")*
http://www.ece.ust.hk/public/programs/4yr_ug_beng_elec.html

BEng in Industrial Engineering & Engineering Management
https://www.ieda.ust.hk/eng/detail.php?catid=3&sid=58

BEng in Aerospace Engineering
BEng in Mechanical Engineering
https://www.mae.ust.hk/en/alumni-careers/mae-careers/career-prospects

30. **Do large engineering corporations have bigger demands for engineering graduates in specific disciplines?**

Large engineering corporations look for engineers from various disciplines rather than one single discipline. Even for civil engineering companies, they do not only need civil engineers but also mechanical or electrical engineers, etc.

31. **If I do not want to be an engineer in the future, what sort of options do I have after graduation?**

An education at SENG helps students to develop into skilled communicators, analytical and inventive researchers, and adaptable problem-solvers capable of continuous learning and taking up a range of roles in different types of organizations or running their own business. SENG emphasizes developing students' logical thinking, analytical skills and creativity. These transferable skills enable them to excel in various positions in many industries and to adapt to the continuously evolving working environments in today's fast-changing world.

32. **If I am an engineer, do I need to work at construction sites?**

Engineers fall into many disciplines, from chemical engineers to civil engineers, electronics engineers to mechanical engineers. Whether an engineer needs to work at construction sites depends on their disciplines, the nature of their work, the level of their positions, etc.

33. **Any chance for further studies after getting my Bachelor degree?**

Graduates may further their studies by enrolling into Master of Philosophy (MPhil) or Master of Science (MSc) programs. The former one is research-based, while the latter one is a course-work program. Apart from HKUST, some students may choose to study abroad with top-notch universities. Because of the high quality of our graduates, they are often sought after by many of these world-class universities.

September 2018