

EMBRACE CHANGE IN THE CENTURY OF ENGINEERING



香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY



工學院
SCHOOL OF
ENGINEERING

World Rankings of HKUST School of Engineering

NO.1 IN HONG KONG

Times Higher Education World University Rankings, 2021
QS World University Rankings, 2021



NO.20

in the World in the area
of Engineering & Technology

QS World University Rankings, 2021

NO.26

in the World in the area
of Engineering & Technology

Times Higher Education World
University Rankings, 2021



Statistics and Operational
Research **WORLD NO. 47**
(No.1 in Hong Kong)



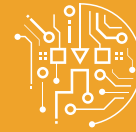
Mechanical, Aeronautical
& Manufacturing
Engineering **WORLD NO. 28**
(No.1 in Hong Kong)



Computer Science & Information
Systems

WORLD NO. 30

(No.1 in Hong Kong)



Electrical & Electronic
Engineering

WORLD NO. 20

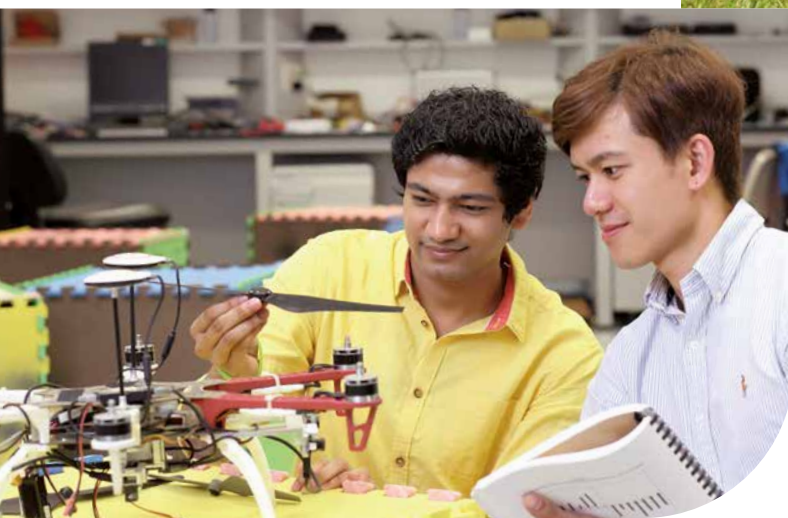
(No.1 in Hong Kong)



Civil & Structural
Engineering

WORLD NO. 16

(No.1 in Hong Kong)



Chemical Engineering
WORLD NO. 32

(No.1 in Hong Kong)

WHY HKUST ENGINEERING?



World-Class Education

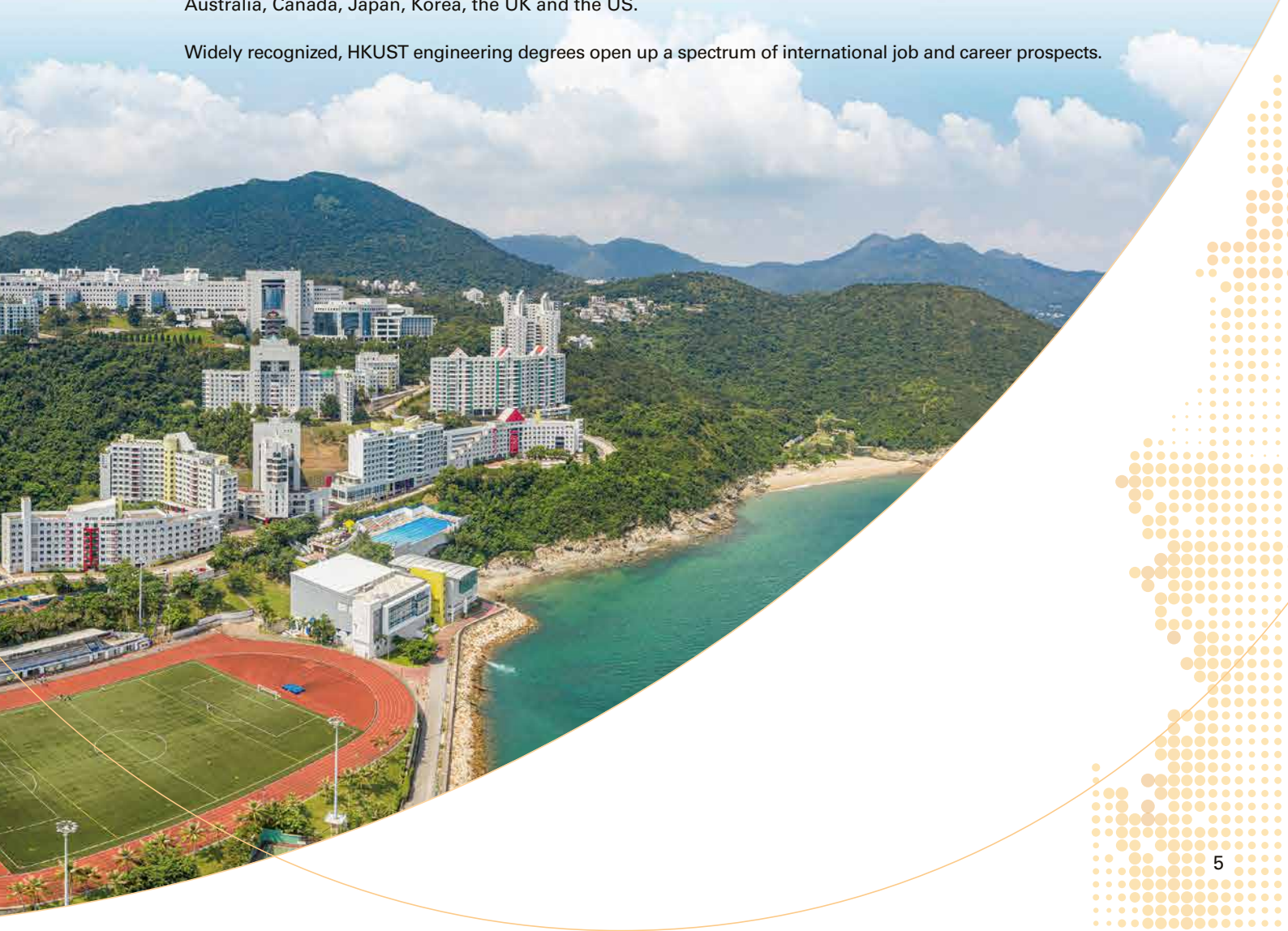
Our young, forward looking university with one of the best schools of Engineering in the world has established high global rankings. You will learn from professors with PhD degrees from first-class universities around the globe, who closely follow pedagogical developments to increase their teaching effectiveness. We have achieved leadership in teaching in both established and emerging engineering fields with our student-centric approach, whole-person development and active career guidance. The School of Engineering (SENG) is globally renowned for its research excellence.

International Professional Recognition

Our high standards are acknowledged by a range of local and international official professional recognitions. Our programs are not only accredited by the Hong Kong Institution of Engineers, they are also officially recognized by more than 20 countries, which are members of the Washington Accord. These include Australia, Canada, Korea, Malaysia, Singapore, New Zealand, the UK, the US and others.

Programs related to IT and computing are recognized under the Seoul Accord, with signatories including Australia, Canada, Japan, Korea, the UK and the US.

Widely recognized, HKUST engineering degrees open up a spectrum of international job and career prospects.



360° Global Learning Experiences

Step out of the classroom and widen your horizon with a multitude of global learning offerings.

Overseas Exchange

Be one of the approximately 40% of our engineering students who spend a term outside of Hong Kong. Study overseas at one of the 120+ host institutions, while only paying the normative HKUST tuition fee.

Study Abroad

Choose from the wide range of study abroad programs available through HKUST's extensive collaborative network. Discounts and scholarships are available on some programs.

International Research

Join an international research team at a top-notch research university or join hands with students from a world-class University on an engineering design project. (More details about the Harvard-HKUST program on p.30)

Global Virtual Exchange

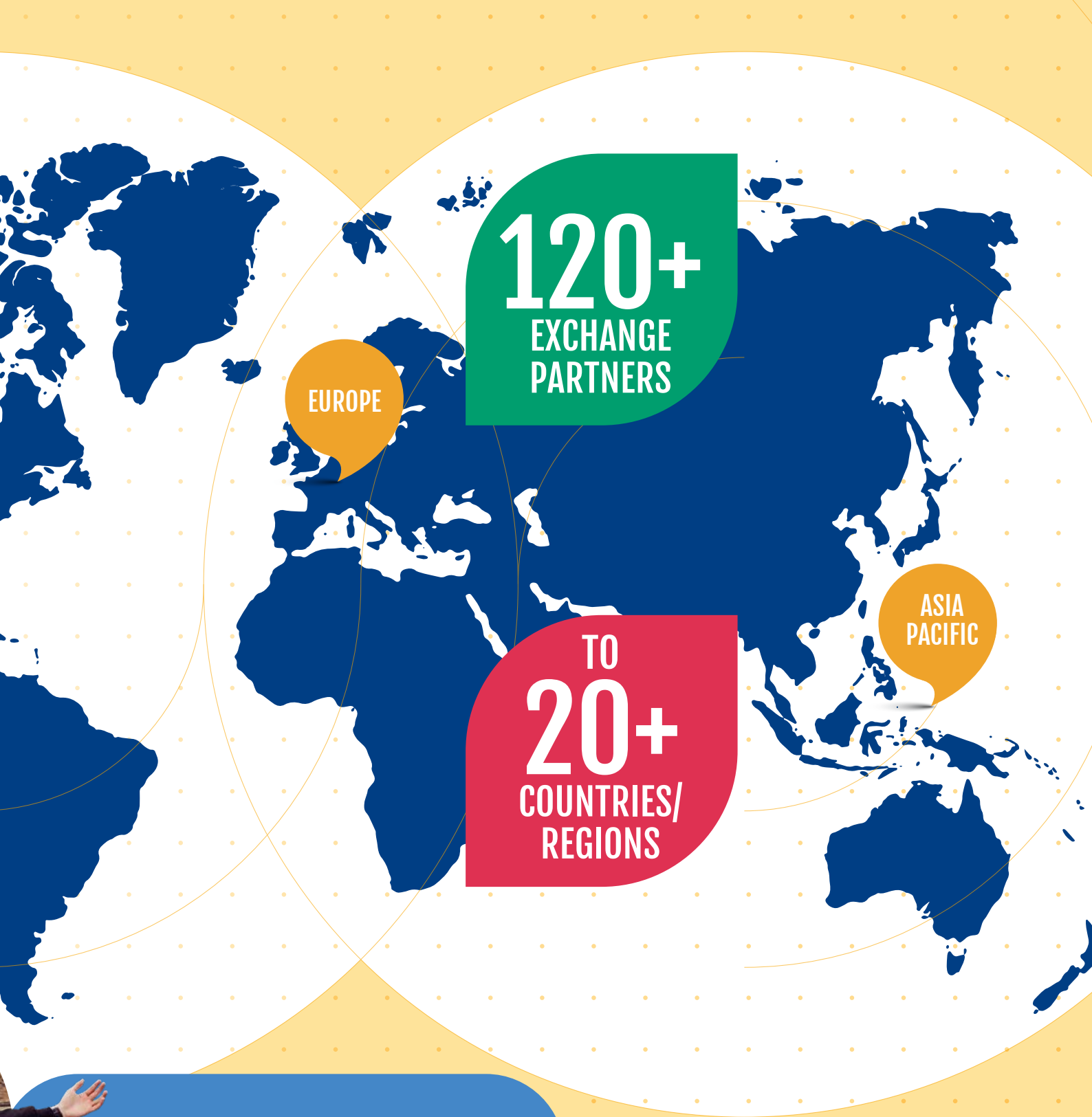
Gain global insight by joining credit-bearing virtual courses offered by top universities around the globe through the HKUST's network.



NORTH
AMERICA

AROUND
40%
Engineering Students
on Exchange Per Year





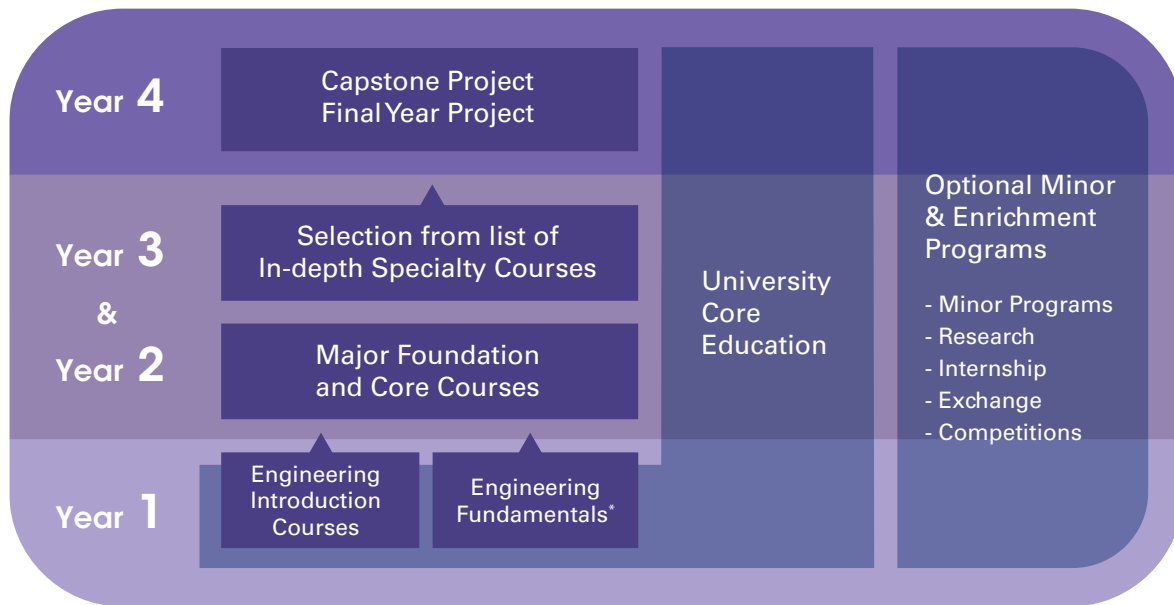
Eden TI

BEng (Chemical Engineering) and BBA (General Business Management)
University College London (UK)

Learn how to become more independent and mature. No one was making decisions for me anymore. Things were never as hard as I expected them to be. In future, I will try my best to achieve more in different areas.

INSPIRING PROGRAMS

The Engineering Curriculum



* Mathematics, Science, Computing, Technical Communication

In the four-year undergraduate program, students are admitted to SENG first. In the first year, you learn the fundamentals of engineering and explore various engineering disciplines through introduction courses. At the end of the first year, you will make an informed choice of the discipline you will be studying at SENG for the next three years.

The broad-based, student-centered program allows you to take up additional major or minor programs or dual degree programs involving both engineering and non-engineering areas. Students with substantial credit transfer upon admission may be able to graduate in less than four years.



Major Programs

Choose from a wide spectrum of world-class engineering programs after the first year at Hong Kong's No.1 School of Engineering.

- BEng in Aerospace Engineering
- BEng in Bioengineering
- BEng in Chemical Engineering
- BEng in Chemical and Environmental Engineering
- BEng in Civil Engineering
- BEng in Civil and Environmental Engineering
- BEng in Computer Engineering
- BEng/BSc in Computer Science
- BEng in Decision Analytics
- BEng in Electronic Engineering
- BEng in Industrial Engineering and Engineering Management
- BEng in Mechanical Engineering
- BEng in Sustainable Energy Engineering
- BSc in Integrative Systems and Design

All the above majors can be completed with an Extended Major in Artificial Intelligence.
(More details on p.22)

Interdisciplinary Major Programs

Widen your career options! After the first year at SENG, you can also select a cutting-edge interdisciplinary major covering business management, data science, the environment or risk management.

- Dual Degree Program (BEng/BSc and BBA) in Technology and Management
- BSc in Data Science and Technology
- BSc in Environmental Management and Technology
- BSc in Risk Management and Business Intelligence
- BSc in Individualized Interdisciplinary Major

Minor Programs

You can enrich your learning experience by taking up one or more insightful minor programs, such as the ones listed below.

- Actuarial Mathematics
- Aeronautical Engineering
- Big Data Technology
- Business
- Entrepreneurship
- Robotics

The above list is by no means exhaustive
Check it out from HKUST's website!

WHAT is ENGINEERING?

Ir Samantha KONG

2014 BEng (Chemical and Environmental Engineering)
Senior Sustainability Engineer, Arup
Visiting Assistant Professor, The Hong Kong Polytechnic University
Co-Founder, Eldpathy Co. Limited
Hong Kong Top 10 Outstanding Youth 2014
NAAEE 30 Under 30 Environmental Educator 2018
IET HK Young Woman Engineer of the Year 2020

“Service to humanity is the best work of life” — I served the university as the Head Student Ambassador and Core Peer Mentor of the School of Engineering at HKUST. The international exposure and analytical skills that I acquired from HKUST turned me into a social entrepreneur when I was 19. I co-founded a social enterprise to promote empathy for the elderly. Upon graduation, I worked at the United Nations Headquarters in New York on health and environmental literacy. Looking back, I realized the engineering knowledge and mindset that I learnt in HKUST were indeed very useful in laying a solid foundation for the career I enjoy immensely. It also inspired me that the true meaning of life is to empower people to create positive changes, a conviction that prepares me for the professional environmental engineer that I am today.”

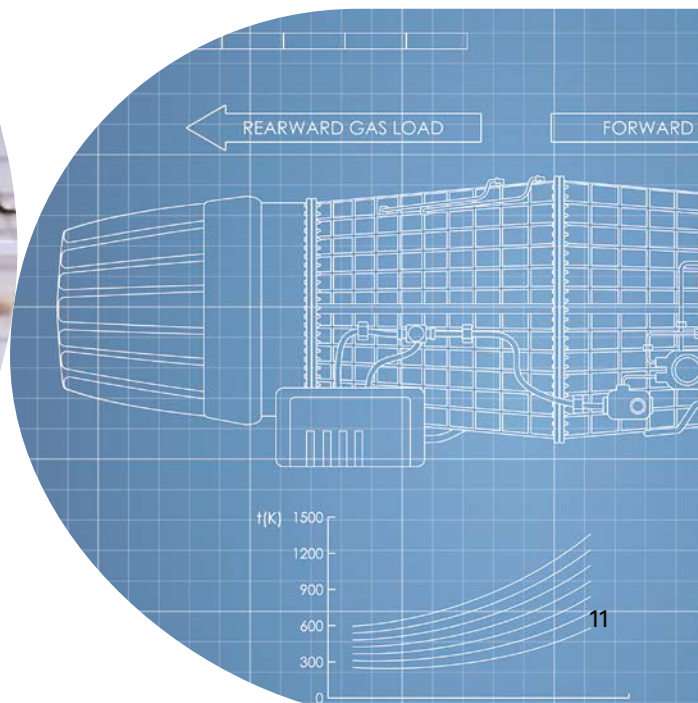


Are you a problem solver who likes to make things work more efficiently and effectively? Then engineering, which uses scientific, mathematical, economic, social and practical knowledge to solve problems in our daily lives, will interest you.

Engineering strives to improve our lives with great inventions, such as computers, satellites, medical devices, artificial intelligence and renewable energy technologies. Whether we live in a tall building or work in a skyscraper, take the MTR or use our mobile phone, invest our personal savings or make critical business decisions, now more than ever, we constantly enjoy the fruits of engineering in our daily lives. They are not only around us everywhere, but develop at an unprecedented speed led by incredible new discoveries and inventions.

BEng in Aerospace Engineering

The Aerospace Engineering program places emphasis on green aviation and new flying vehicles. It aims at equipping graduates with necessary understanding of the essential disciplines of aerodynamics, aircraft structures, flying vehicle dynamics and control, propulsion, material, aero elasticity and interdisciplinary design with a strong theoretical base which is well suited for careers in aerospace and related engineering fields.

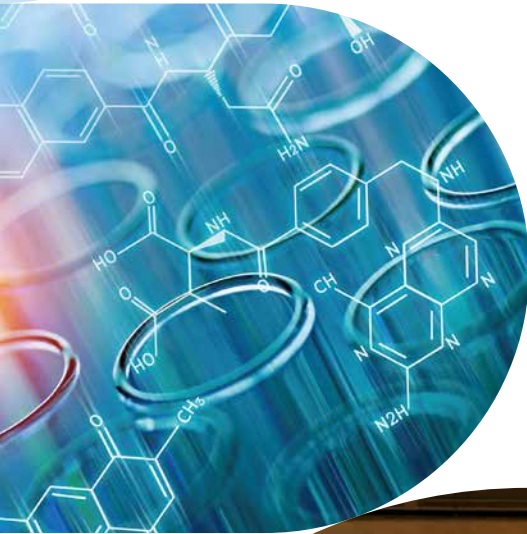


BEng in Bioengineering

Bioengineering combines both engineering and the life sciences. Bioengineers use engineering principles and the power of biology to tackle medical challenges and improve human health, as well as a wide range of issues, ranging from energy shortage, food and water security, environmental pollution, and an ageing population. The program includes a foundation of mathematics and sciences specially designed for bioengineers and two areas of specialization (data-oriented, and molecular-oriented). Graduates will find employment as bioengineering innovators, researchers, clinical scientists, and entrepreneurs.

BEng in Chemical Engineering

Chemical Engineering is a discipline in which the principles of physical, chemical and natural sciences are used to solve applied chemistry related problems in manufacturing processes and plants. Students learn to design a manufacturing plant; transform raw materials into valuable products; purify the products to meet consumer demands; ensure high quality standard; automate the plant to make production safe and economical; minimize waste and pollution; market and sell the products at a profit; and work effectively with chemical engineering equipment.



Coeinne LOH

BEng (Electronic Engineering)
University of California, Berkeley (USA)

The exchange at Berkeley meant a lot to me. It made me realize that I am much more capable than I thought I am, it changed my perspective on the world and it definitely changed my life.



BEng in Chemical and Environmental Engineering

This program emphasizes processes that turn raw materials into valuable products without producing effluents and wastes. All companies handling such processes need environmental engineers with a basic knowledge of chemical engineering to design, control, manage and operate environmental treatment facilities. This combined degree enables students to understand various industrial processes and realize where environmental control measures can be implemented, thus making the community a better place to live in.

BEng in Civil Engineering

Civil Engineering concerns the planning, design, construction, maintenance and management of various structures such as buildings, bridges, roads, railways, tunnels, slopes, airports, harbor facilities, solid waste treatment and landfills, water/sewage treatment plants, dams, water pipes, gas mains, etc. In short, Civil Engineering is about the infrastructure of modern civilization.





BEng in Civil and Environmental Engineering

The program provides broad engineering training with an emphasis on the areas of water and waste-water engineering, solid and hazardous waste management, and air/noise pollution control. As environmental quality is a major public concern all over the world, along with the rapid economic development in Hong Kong and Asia at large, more and more resources will be committed to improving and managing our environment. Thus, there will be a great need for properly trained environmental engineers.

BEng in Computer Engineering

Computer Engineering focuses on the analysis, design, implementation and utilization of computer systems, from embedded microprocessors, notebook/desktop computers to supercomputers, as well as how they are integrated with other systems to meet the challenges of real-world applications. It bridges the gap between computer science and electronic engineering, and offers students a balanced training on both hardware and software skills, by taking full advantages of the human resources and laboratory facilities of both Department of Electronic & Computer Engineering and Department of Computer Science & Engineering. It's a well-integrated 2-in-1 program!

BEng in Computer Science

Computer Science studies the application of computers in solving important problems in scientific, engineering and commercial domains. Our BEng program provides a broad education, teaching problem solving skills to tackle computation problems in all core areas, including programming, data structures and algorithms, operating systems, and software engineering. Students can then choose to learn diverse areas of computer science, such as databases and data mining, networking, embedded systems, computer graphics, image processing, artificial intelligence, machine learning, computer vision, computer security, and theoretical computer science.



BSc in Computer Science

BSc in Computer Science (COSC) is uniquely designed to be utilized as one half of a double-major declaration. Students enrolled in COSC are required to be simultaneously enrolled in at least one other major, e.g. Mathematics, Physics, Quantitative Finance, Quantitative Social Analysis, Biotechnology, etc. Students who wish to double-major can either start in Computer Science and declare their second major afterwards, or start in another major and then add COSC. In the former case, you should seek admission to the School of Engineering.

BSc in Data Science and Technology

The Program equips students with various mathematical tools, data analytical skills and IT technologies to make sense of data obtained from various sources and to utilize them. For example, in industry, data science and technology would help to improve their productivity, whereas in commerce, it would serve as quick analytics to predict the stock price, design new investment tools, etc. Through four years of rigorous training, students are expected to be well versed with useful tools to deal with data such as data analytics, programming skills and mathematical modeling, all of which give students a solid foundation for their future career.

(Jointly offered by the Department of Mathematics and the Department of Computer Science and Engineering)





BEng in Decision Analytics

The major in Decision Analytics was introduced in 2018 to align the aspirations of students with current and future societal needs of the knowledge economy. Students are trained to analyze real-world data, build and fit models that are consistent with data, develop algorithms, simulate models, and design process and system innovations seeking optimal solutions to important decision problems in domain specific areas, such as Financial Engineering and Consulting Services. Graduates who are equipped with predictive and prescriptive analytical tools will be better able to source high value-added jobs in banks, insurance companies, consulting firms, e-commerce, travel and leisure industry, and health-care organizations.

Ivan GONDOPRASTOWO

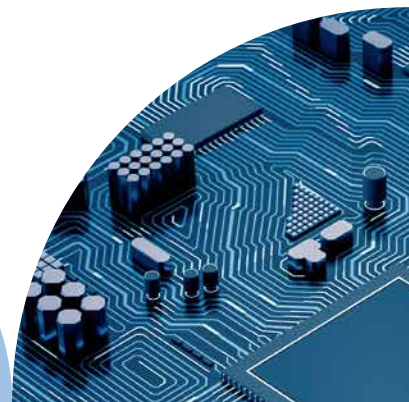
2014 BEng (Computer Science)
Vice President, Soft Engineering,
JPMorgan Chase & Co.

Global opportunities offered by HKUST are just priceless. Being a part of one of the world's renowned universities certainly opens up exciting opportunities in Hong Kong, Mainland China, and the world... I spent a summer in India and joined a prestigious internship program by an IT giant, Infosys. I went to Tsinghua University for a short-term exchange program and spent my penultimate year summer with one of the biggest financial services firm in the world, J.P. Morgan, at their APAC Headquarters in Hong Kong. I believe that the training, network, partnership and HKUST worldwide recognition are the ones that make this kind of experience possible, and HKUST is one of the few universities in Asia, or in the world, that has all these to offer.



BEng in Electronic Engineering

Energy and information flow in electrical form, and electronic engineers develop technologies that have vastly improved our quality of life. The BEng in Electronic Engineering program covers technologies that found applications in artificial intelligence (AI), big data, robotics, internet of things, etc. These advanced technologies include signal and information processing, communications and networks, computer engineering and embedded system design, robotics and automation, microelectronics and integrated circuit design, photonics and optics, and biomedical electronics. These areas are critical to the growth of our information-based society and mastering them opens up vast career opportunities.



Mashiat LAMISA

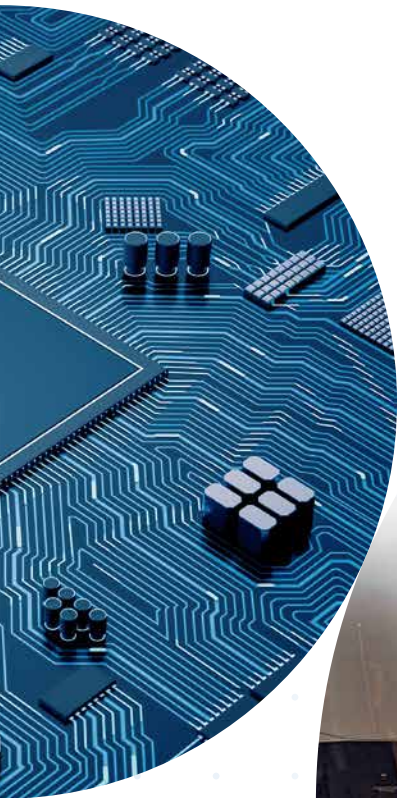
2020 BSc (Integrative Systems and Design)
Product Engineer, Sparkmate Hong Kong

HKUST has been the most significant point of turn in my personal and professional life given how much it has allowed me to grow as a person and inspired me to turn my entrepreneurial dreams into reality. I not only got to study here but learnt to build things, invent and work with new technology hands-on. Graduating from ISD has made it possible for me to get my hands on the latest technologies while in university which a lot of people might not have the opportunity to. The experiential learning at ISD is so all-rounded that as soon as I graduated, I was overwhelmingly welcomed by employers from different industries. Ultimately, that led me to my dream job of being a maker, a product engineer at Sparkmate. Being a female in STEM was not just encouraged but also celebrated here in HKUST's School of Engineering and that has played a core part of building a can-do attitude within me.



BEng in Industrial Engineering and Engineering Management

Industrial Engineering is the active and dynamic discipline of advanced scientific management – the engineering of making smart decisions. By adopting a decision analytics approach with the use of real-world data to drive decision models, graduates of this program are equipped with strong analytical skills as well as the ability to develop algorithms and simulation models for decision-making in domain specific knowledge of problems ranging from operations planning and scheduling to transportation systems and policies, and from global supply chain management to quality control.







BEng in Mechanical Engineering

The program is structured in three stages. The first stage concentrates on the fundamentals of mechanical engineering. The second stage integrates engineering sciences with laboratory work and exposes students to state-of-the-art tools and equipment. The third stage comprises electives that provide students with sufficient depth in one of the following areas of specialization: (i) Building Services, Energy and Environmental Engineering, (ii) Mechatronics, Design and Manufacturing, and (iii) Structure, Materials and Reliability Engineering.

BEng in Sustainable Energy Engineering

Sustainable Energy Engineering is an inter-disciplinary program covering energy generation, delivery, efficiency, conversion and storage, sustainability, and energy policy. It aims to develop leading professionals who can design and implement both traditional and renewable energy systems to respond to expanding global environmental and energy needs. This advanced training enables graduates to develop career in the government and companies in energy related fields.

BSc in Integrative Systems and Design

This program provides a multi-disciplinary training to students in integrative systems and design. It adopts a student-centric curriculum, which is created based on their talents and interests, and a project-based learning approach in which students study and work in teams. Students acquire knowledge in design and systems thinking, specific technology and entrepreneurial spirit through learning-by-doing. The birth of disruptive innovations requires both cutting-edge science and engineering advancement and creates a

huge demand for innovators who can integrate know-hows that span different disciplines in a user-oriented and human-centered mindset.



ENGINEERING WITH AN EXTENDED MAJOR IN ARTIFICIAL INTELLIGENCE





The first of its kind in Hong Kong, the **Engineering with an Extended Major in Artificial Intelligence** seeks to combine a degree in engineering with additional study in the hot area Artificial Intelligence (AI). Within 4 years, you obtain an engineering degree, PLUS knowledge in AI subjects.

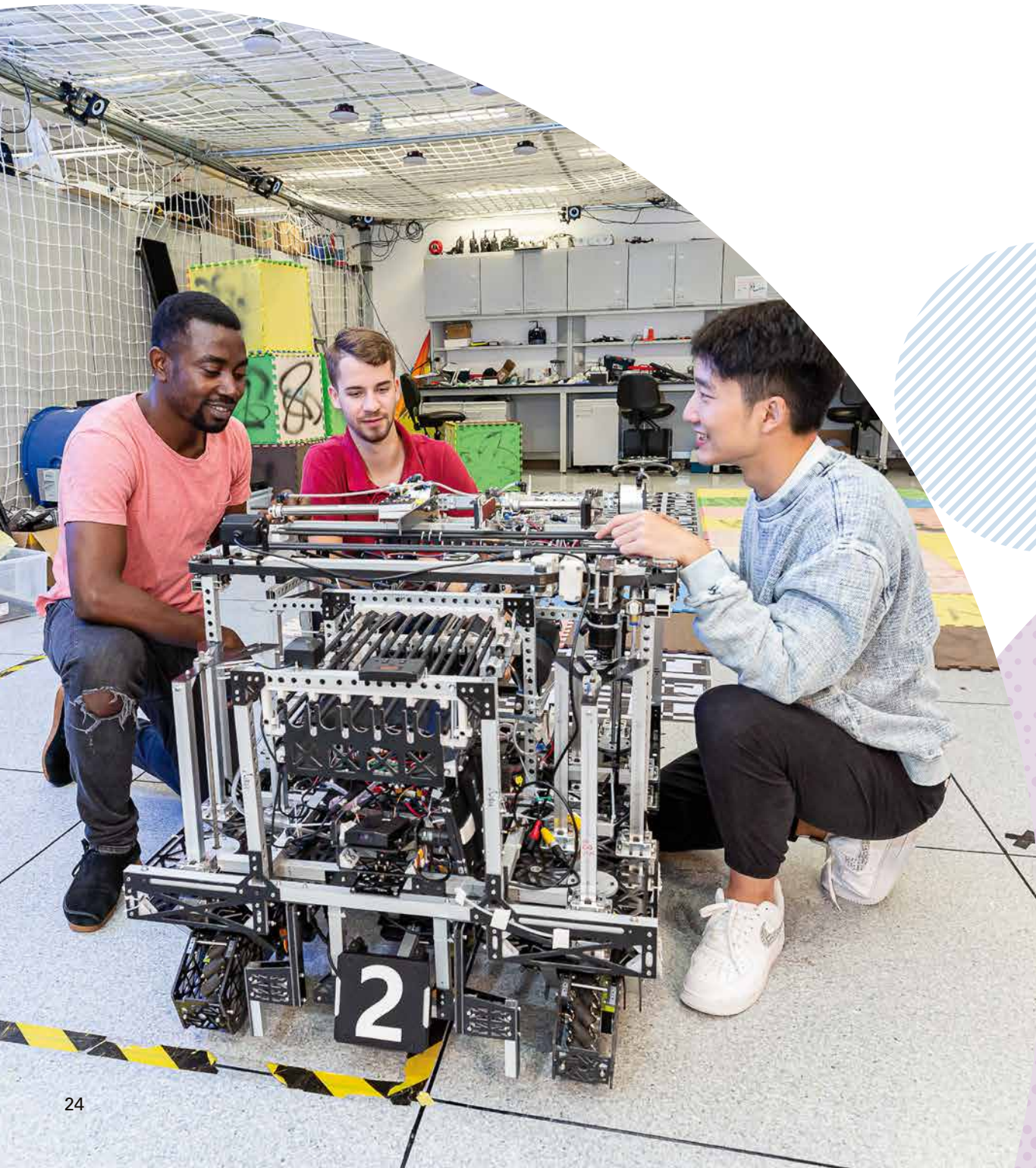
Highly interdisciplinary in nature, the AI curriculum covers a number of cross-disciplinary components beyond technical skills, such as design thinking, ethics, etc. It's practical — the AI knowledge can be directly applied to your major engineering field, and be an asset to your career development.

Just slightly overload in each term. No extension of study period needed. No extra tuition fee.

Students with confirmed interest in AI can apply for admission to this program directly. (More details about admission on p.25)



ADMISSION REQUIREMENTS



For Local Applicants with HKDSE Results

• Engineering (School-based admission)

JUPAS No.: JS5200

• Engineering with an Extended Major in Artificial Intelligence (School-based admission)

JUPAS No.: JS5282

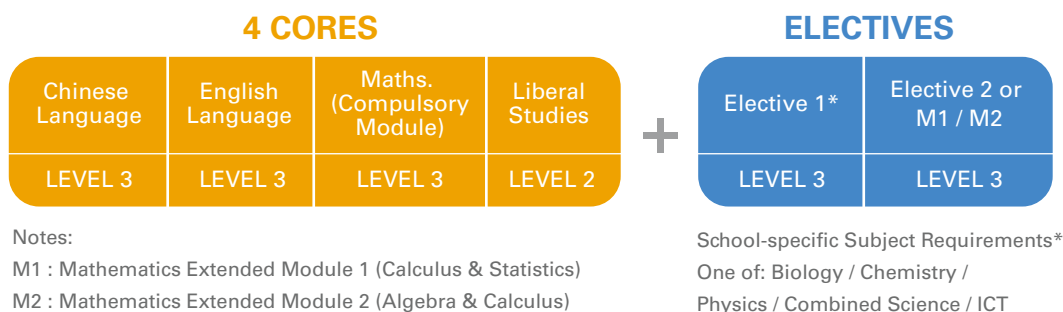
• BSc in Integrative Systems and Design

JUPAS No.: JS5211

Applicants with Hong Kong Diploma of Secondary Education (HKDSE) results must meet

(i) General requirements, and (ii) School-specific Subject requirements*:

General Requirements



For Applicants with International Qualifications

HKUST recognizes various international qualifications for admissions.

The following list shows some of the examples and is by no means exhaustive.

General Admission Requirements

- | | |
|---|---------------------------------------|
| 1. American Patterned System (SAT/AP) | 5. Indonesian Curriculum |
| 2. British Patterned System (GCEAL/IAL) | 6. International Baccalaureate |
| 3. Canadian Curriculum | 7. Malaysian Curriculum (STPM or UEC) |
| 4. Indian Curriculum | |

Others

Many more qualifications recognized by HKUST for admission can be found at <https://join.hkust.edu.hk/>

School-Specific Subject Requirements

Senior High School Mathematics **AND**

One Senior High School subject from Physics, Chemistry, Biology, Computer Studies, Statistics*

(other relevant subjects may also be considered)

*Design related subjects will also be considered by the BSc in Integrative Systems and Design Program, e.g. Design & Applied Technology in HKDSE.

ENRICH YOUR LEARNING EXPERIENCE



Learning outside the classroom is an important part of education. At HKUST SENG you can participate in different co-curricular programs, which offer an inspiring whole-person education.

Local, National, and International Competitions

Participating in competitions is the best way for you to express your creativity and develop your problem-solving skills. In addition, you also learn teamwork, management and leadership skills, and enhance your communication and interpersonal skills. HKUST's engineering students are experienced and formidable competitors in robotics, underwater robots, smart cars and solar cars, powered wheelchairs and aeronautics, to mention but a few categories.



Student-driven Practicum Ignites Creativity

In our fast-changing world, creativity and problem-solving are the most important attributes a graduate can have. To nurture student's creativity, SENG established the Undergraduate Student-initiated Experiential Learning (USEL) program to all its undergraduates, encouraging them to initiate projects and carry them out under the guidance of faculty members. With the USEL lab that allows 24-hour access and the Fei Chi En Dream Team Open Lab, you will have plenty of space, facilities and equipment applicable to a wide range of disciplines to develop your creativity while realizing you dreams.



Ellen LEE

2017 BEng (Civil Engineering) and BBA (General Business Management)
Engineer, Highways Department — The Government of the HKSAR

The time I spent in HKUST SENG was a fruitful experience that reinforces my knowledge in the engineering profession and allows me to gain insight of how we could strive for the betterment. There were lots of opportunities for me to learn, to expand my social network and to contribute to the university and the society at large. My years in HKUST SENG deepens my impression that engineering is full of challenges but at the same time very fulfilling.

Despite the busy day work, I continue and further extend my involvement and contribution as a Head Engineering Student Ambassador and Peer Mentor of SENG to different professional institutions and the society. I believe that through involvement, I gain a wider exposure and I am able to meet people with similar thoughts that speeds my learning and enables me to exchange interdisciplinary knowledge.



Eva TSANG

1999 BEng (Chemical and Biological Engineering)
Executive Director, Opal International Trading Limited
GBA Outstanding Women Entrepreneur Award 2020

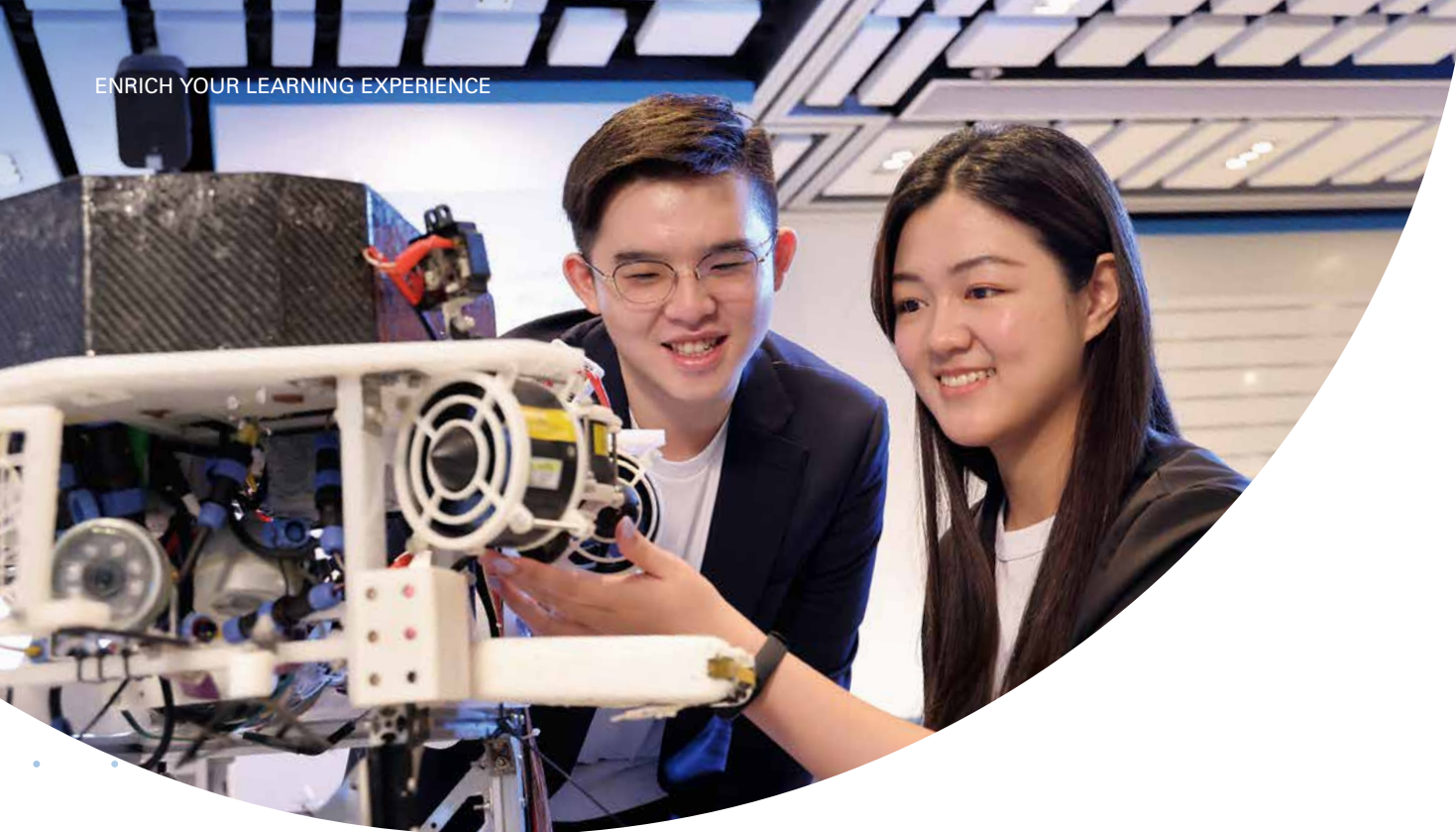
Girls need not pay attention to other people's opinions on whether they should study engineering or be entrepreneurs as long as they can prove themselves. While there was hesitation about my ability in the beginning, I took action to prove myself. I gained precious experience on how to form a team and had the opportunity to organize international events which brought students from over 10 countries and regions to the HKUST campus.



Undergraduate Research Opportunities

The HKUST's signature Undergraduate Research Opportunities program (UROP) provides a unique opportunity for undergraduate students to engage in academic research under guidance and supervision by professors. A undergraduate research award is established to recognize outstanding projects.





Design Experience Across Two Continents

The Harvard-HKUST International Engineering Design Experience Program adds a global dimension to engineering students' design education. Through the program, SENG students team up with their counterparts from Harvard to work on a design project of a selected theme. During the 8 weeks in summer, you will spend half of your time at Harvard and HKUST respectively, thus enabling you to be immersed in the local culture and foster life-long friendships with your Harvard teammates alongside the inspiring design experience that you reap from the program.



Internship

Students' early exposure to professional work experience and learning about different industries is an important part of a whole-person education. At SENG, the Center for Industry Engagement and Internship serves as an interface between industry and the School to set up valuable internship engagements for students that help you identify your passion and interest in career choices and build your career path early, while still at university.

Mick TSE

2016 BEng (Mechanical Engineering)
Assistant Engineer, Swire Properties Limited

SENG offers a lot of courses and activities that not only focus on the students' academic, but also all-round development. These include summer camps, experiential learning courses and exchange programs, to name but a few. These, together with the practical experience acquired from the Co-op program held by the Department of Mechanical and Aerospace Engineering, prepared me to gladly take up the job duties at a leading property developer in Hong Kong.



Peer Mentoring Guides Freshmen

Learning to Teach, Teaching to Learn

Our senior year engineering students are “Learning to Teach, Teaching to Learn”. Having gone through coaching in well-designed workshops, they provide peer mentoring support to freshmen. The Peer Mentoring Program helps senior students to reflect on their experiences and convert them to useful advice and guidance to freshmen, assisting them in their transition to university life.

Engineering Student Ambassador

SENG chooses the best students for the Engineering Student Ambassador Program to represent the School and promote engineering to prospective students. This future-defining program provides the opportunity of a lifetime for you to learn social and leadership skills and become a future leader.



Benny CHEUNG

2007 BEng (Chemical and Biomolecular Engineering)
Business Engineer 1, CLP Power Hong Kong Limited

Back at the time when I won the HKUST President's Cup in 2007, SENG prepared me to pursue innovation and creativity to make our community better. Equipped with the unique chemical engineering knowledge, I realized that electricity generation can power up everyone's life reliably but at the same time it is eco-friendly. I am proud to be a graduate of HKUST and the connection with HKUST will always be my greatest support in my whole life.



Parry CHAN

2016 BEng (Industrial Engineering and Engineering Management)
Assistant Supply Chain Systems Manager, The Hong Kong and
China Gas Company Limited



I am glad to be an alumnus of HKUST School of Engineering. Industrial engineering taught me how to make smart decisions by using different engineering and mathematical tools and the understanding of the business world. Today, I am happy to be a member of Towngas, where I can contribute together with my colleagues to providing our customers with a safe and reliable supply of energy and the caring, competent and efficient service they expect, while working to preserve, protect and improve our environment.

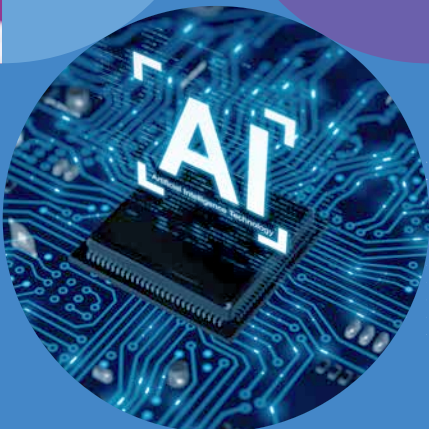
Sze Lok CHAN

2010 BEng (Computer Science)
Manager, Startup Business Development (HK & TW), Amazon Web Services Inc.

Learn how to learn" is the most valuable lesson I learnt at HKUST. SENG is not just a school that equips you with all the essential skills that you need as an engineer. In addition, you will be also taught and trained to be a good learner. I have answered questions without having the right answers, explored ideas they didn't teach in class and was inspired by classmates, an inspiration that keeps growing in every aspect through a wide variety of courses, tutorials, industrial training and projects. I was also grateful to be supported by the School to join LIBRA (a two-week study tour) and an exchange program in the summer that have strengthened my language foundations. All of these have paved the way for me to pursue further studies and work in one of the most reputable tech companies today.







School of Engineering

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