The Chinese University of Hong Kong

FACULTY OF ENGINEERING

2018-19

ENGINEERING CUHK

Contents

CUHK

Founded in 1963, CUHK is a leading comprehensive research university committed to research and education excellence with a global reputation. Located in the heart of Asia, CUHK has a vision and a mission to combine tradition with modernity, and to bring together China and the West. Under the University's unique collegial system, the programmes and activities offered by its nine colleges complement the formal curricula by delivering whole-person education and pastoral care. The University has eight faculties: Arts, Business Administration, Education, Engineering, Law, Medicine, Science, and Social Science. Together with the Graduate School, the University offers over 300 undergraduate and postgraduate programmes. All faculties are actively engaged in research in a wide range of disciplines, with an array of research institutes and research centres specialising in interdisciplinary research of the highest quality.

CUHK is recognised as the most innovative university in Hong Kong and is ranked 22nd in the Asia-Pacific region by the latest 'Reuters: Asia Pacific's Most Innovative Universities' listing. The University houses a number of research institutes and organisations dedicated to the advancement of sustainable development, including Institute of Environment, Energy and Sustainability, the Institute of Future Cities, the Jockey Club Museum of Climate Change, and the Hong Kong Chapter of the United Nations Sustainable Development Solutions Network.

Dean's Words

Engineering: Impacting the world around you

Engineering is the application of scientific and mathematical knowledge to solving problems in the real world. It involves a solid understanding of the physical principles, rigorous derivation of equations and formula, and the ability to combine them in the formulation and practical solutions of problems at hand. Engineering is not the easiest subject to study, but it provides a solid and comprehensive training on analytical thinking and problem-solving skills. Such training will be ever useful to graduates as they move along career paths within or outside the field led by their evolving personal interests and choices.

The field of engineering has greatly benefitted mankind throughout history. From the invention of the steam engine, to the building of the city infrastructure, and the proliferation of microprocessors, WIFI and smart phones, engineers have improved the quality of lives for the better. Students entering engineering will be joining a long line of dedicated men and women contributed to shaping our world that we know of today. They will be in the position of tackling new and exciting technological challenges facing mankind in the future.

The Faculty of Engineering at CUHK was established in 1991 by the then Vice Chancellor of CUHK Professor Sir Charles Kao, "Father of Optical Fiber Communication" and Novel Laureate in Physics 2009. Till this day, the Faculty is profoundly shaped and greatly motivated by his vision, his lasting achievements and his exemplary leadership. Over the years, the Faculty has recruited top tier faculty members with outstanding track records and strong commitment to teaching. Our undergraduate programmes are designed to train students in strategic areas vital to the sustainable growth and betterment of future society:

1. Artificial Intelligence
2. Biomedical Engineering
3. Big Data Analytics
4. Cyber Security
5. Design and Advanced Manufacturing
6. Environment and Energy Technology
7. Financial Technology/Financial Engineering & Service Engineering
8. Nanotechnology
9. Robotics

Our many alumni have been diligently serving the community as engineers, technical managers, academics, entrepreneurs, CEOs, founders of start-up companies, and in many other capacities.

We hope that you will find this booklet interesting and informative on the six Departments within the Faculty of Engineering, and the educational programmes they offer. We are proud of the achievements and awards received by our students and staffs. We encourage that you visit the facilities and projects on display, and talk to our students on their learning experience. We sincerely wish the best to those of you who are in the process of contemplating your future course of study.

Prof. Yam Yeung
Interim Dean of Engineering

Faculty of Engineering

Faculty Mission

The Faculty is committed to the education of future leaders in engineering, the pursuit of knowledge at the frontier of modern technology, and the application of technology to meet societal and human needs. In both teaching and research, the Faculty is guided by the highest international academic standards.

There are six departments in the Faculty of Engineering:

Biomedical Engineering
Computer Science and Engineering
Electronic Engineering
Information Engineering
Mechanical and Automation Engineering
Systems Engineering and Engineering Management

Degree Programmes

The Faculty currently offers the following bachelor, master, and doctoral degree programmes:

Bachelor of Engineering
Artificial Intelligence: Systems and Technologies[1]
Biomedical Engineering
Computer Engineering
Electronic Engineering
Energy and Environmental Engineering
Financial Technology
Information Engineering
Mechanical and Automation Engineering
Systems Engineering and Engineering Management

Bachelor of Science
Computer Science
Mathematics and Information Engineering

Double Degree Option
Engineering and Business Administration[2]

Master of Science
Biomedical Engineering (full-time/part-time)
Computer Science (full-time/part-time)
E-Commerce and Logistics Technologies (full-time/part-time)
Electronic Engineering (full-time/part-time)
Information Engineering (full-time/part-time)
Mechanical and Automation Engineering (full-time/part-time)
Systems Engineering and Engineering Management (full-time/part-time)

Master of Philosophy & Doctor of Philosophy
Biomedical Engineering
Computer Science and Engineering
Electronic Engineering
Information Engineering
Mechanical and Automation Engineering
Systems Engineering and Engineering Management

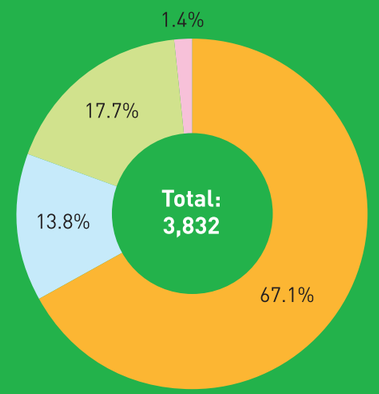
Facts and Figures

Staff

Academic Professoriate 112

Students (2018–19)

2,570	Undergraduate
529	Taught Postgraduate
679	Research Doctoral
54	Research Postgraduate



1. The new programme is subject to University's approval.
2. The Engineering and Business Administration Double Degree Option is jointly offered by the Faculty of Engineering and Faculty of Business Administration. Please refer to P.38 for programme details.

Excellence in Teaching and Research

Over a hundred of the professoriate staff possesses extensive teaching and research experience. Not only do they educate the youngsters with passion, but they also develop forefront technologies that benefit to society. The extensive research areas include mechanics, electronics, information processing, internet, digital entertainment, etc. Some of the research also involves multi-disciplinary or cross departmental knowledge such as biomedical, energy, logistics and financial engineering. Our professors have widely published their research findings in world-class journals and conferences, and at the same time applied their R&D results into practical usage. Their efforts were well recognized by the public, and many of them were awarded national and international prizes, and received prestigious honours.

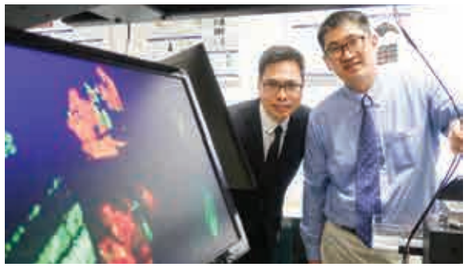
Father of Fibre Optics

The former Vice-Chancellor Prof. Charles Kao founded the Faculty of Engineering and Department of Electronic Engineering. He innovated the groundbreaking optical fibre communication that changed the world, and built a long-term research strategy focusing on information and communications technologies at CUHK.

Prof. Wu Ke-li has developed a wireless network for smart drainage system to provide real-time information on drainage performance, concentration of gases and water level. Through the wireless signal transmission and big data analysis, the system enables frontline staff to take proper and timely action on gas emission, illegal wastewater discharge, and blockage.

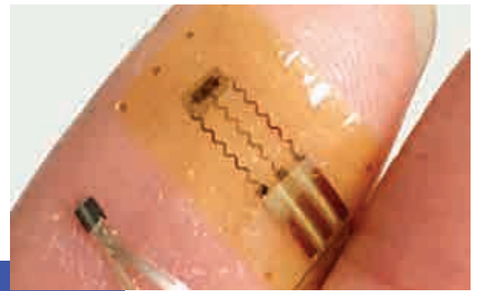
A research team led by Prof. Heng Pheng Ann has developed an automated image processing technology that, through deep learning, is able to offer efficient and accurate diagnosis using CT scan and histopathological images. The technology has been tested on two of Hong Kong's most prevalent cancers – lung cancer and breast cancer, achieving diagnostic accuracies of 91% and 99 percent respectively.

The System Security Lab led by Prof. Zhang Kehuan has designed a new challenge-response protocol for liveness detection. Light from a display screen will be projected to a human face and the reflected light will be captured by a camera to analyse the time interval between the challenge and response.



Prof. Shih-Chi Chen's team has designed the first digital holography-based (DH) two-photon excitation (TPE) microscope to generate simultaneous video-rate fluorescent imaging and multi-point optical stimulation. This allows the tracking of nerve cells activities and thus may help the study of neurological diseases.

A team led by Prof. Raymond Kai-Yu Tong has developed the 3D-printed soft robotic hand by making use of the latest silicone printing technology. This provides stroke patients a tailor-made, less bulky but comfortable and affordable soft robotic hand for the rehabilitation process and so supports rehabilitation of the hand function.

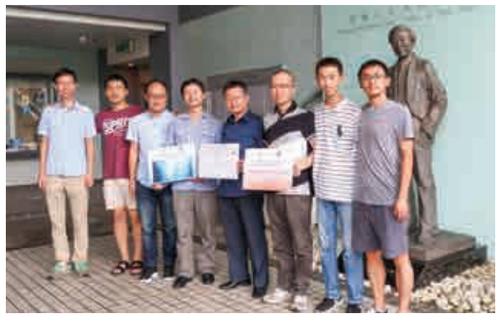


A research team led by Prof. Zhao Ni and Prof. Zhang Yuan Ting has developed an ultra-thin wearable blood pressure sensor that can be worn as a wristband or weaved into clothing to prevent acute health problems. Such a sensor would come with AI so that it can learn and improve on itself, with the human body as its teacher, constantly showing how the body functions and works.

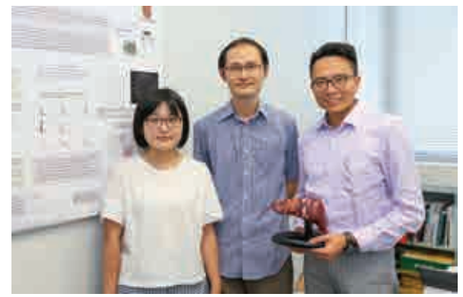
A research team led by Prof. Raymond W. Yeung has invented BATched Sparse code (BATS code) to improve the network transmission rate of networks with packet loss. It is one of the world's most mature networking techniques in which transmitted data is encoded and decoded to increase network throughput, reduce delays and make the network more robust.

CUHK was named by Thomson Reuters as one of the 10 research institutions in the world with the most impact on telecommunications, the only Asian institution on the list in 2015. Prof. Liew Soung-chang's research team has developed the Physical-layer Network Coding as a promising technique that significantly improved the capacity and energy efficiency of wireless networks by tackling the wireless interference problem.

CUHK is one of the pioneers in the research on AI and deep learning. In the GPU Technology Conference 2016 held in Silicon Valley, CUHK was the only institution in Asia to receive this recognition, alongside the University of California, Berkeley, Massachusetts Institute of Technology, Stanford University and the University of Oxford.



Prof. Kevin Yip has studied gene enhancers, a type of regulatory element in DNA, together with their target genes, in 935 human cell and tissue samples. This finding help unlock DNA secrets and scientists can extract the enhancer-target networks most relevant to their target diseases for efficient identification of putative disease-related enhancers and their target genes for further investigations.



Prof. Ren Wei has developed a small, portable, low-cost gas sensing system. The system enables quick and accurate measurements of various pollutants, such as nitric oxide, carbon monoxide, and formaldehyde. It can also be used as an assistive tool to facilitate diagnosis by analysing air exhaled by patients.

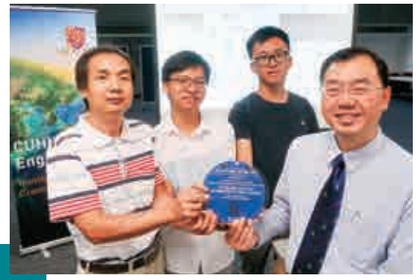
A research team led by Prof. Wong Kam Fai has developed a system called Automatic Colloquialism and Typo Detection System for Chinese Language. It is the first of its kind in Hong Kong and targets local students. The pilot system has been tested among language teachers and local primary and secondary school students, and proven effective in enhancing Chinese language teaching and learning.

Prof. Liao Wei Hsin and his team have developed a wearable knee therapy device for the prevention and treatment of knee joint degeneration diseases. The technologies include low-level laser therapy, heat therapy, acupuncture and massage. Stimulations generated by the device could activate inner tissue of the knee joint and boost metabolism and tissue regeneration. He also developed a powered ankle-foot prosthesis for reproducing the function of human ankles.

Student Achievements

The Faculty has been nurturing countless engineering professionals with excellent academic performance, since its inception in 1991. Apart from academic knowledge acquisition, they have active participation in various local and international activities, and a number of them have also represented Hong Kong to participate in overseas contests and returned with great success.

The CUHK Engineering teams "Power Shuttle" and "Phantom Dancer" have respectively won the first runner-up and the second runner-up in Robocon 2018 Hong Kong Contest. They also received the Best Shuttlecock Design Award in the contest.



A team of the Department of Information Engineering has won the third place of the 2018 Internet Defense Prize and a research grant of US$40,000 funded by Facebook at the 27th USENIX Security Symposium. Their award was for their contribution to the critical analysis of the security of Single Sign-On (SSO) Software Development Kits (SDKs) deployed in practice. This is the first time for researchers from an Asian institution to receive this international award.

Sixteen teams from CUHK have swept up eighteen awards in the "Challenge Cup" National Competition Hong Kong Regional Final – Hong Kong University Student Innovation and Entrepreneurship Competition 2018. CUHK received the highest number of awards amongst the participating tertiary institutions. The "An Efficient Assessment Tool for Child Speech Disorders Based on Intelligent Speech Technology" project from the Department of Electronic Engineering won a first-class award in Information Technology and the Innovation Award.

Engineering students have been sweeping top awards in IMechE Greater China Design Competition 2012-15 and 2017, including the Championships, First Runner-up and the Most Innovative Award.

Prof Raymond Tong and his research team won the 1st place of the IEEE EMBS 2018 Brain-Computer Interface Hackathon in Honolulu. They succeeded in using brain motor imagery signals to real-time control both the external orthosis robot hand and software BrainRacers Unity game.

CUHK won Silver medal in the 36th Annual World Finals of the Association for Computing Machinery International Collegiate Programming Contest, the best result by a Hong Kong institution in 20 Years.

Two teams have won the Championship in the Bank of China (Hong Kong) FinTech Hackathon and received the first runner-up in the UHackFin, organised by the HKUST. The first team proposed a new platform named 'A.I. Stock Analyser' that digests huge amounts of market information and provides personalised stock analysis to meet the rising demands of investors. The other team focused on the past performance of initial coin offering (ICO) for improving the future of financial services.

A team called "g33z" won championships in two hacking competitions; one of them run by PricewaterhouseCoopers (PwC), one of the region's biggest four accounting firms, and the other hosted by the international hacker conference VXCON in Hong Kong. This was the second consecutive year a CUHK team pooled their information security skills to win in the PwC HackaDay.

Diverse Learning Experiences

Engineering Leadership, Innovation, Technology and Entrepreneurship Stream (ELITE Stream)

The ELITE Stream is offered by the Faculty to students with excellent academic performance. It aims to nurture outstanding engineering students and to develop their potentials through challenging courses and invaluable extra-curricular activities. The award of the ELITE Stream to qualified students will be officially recorded on academic transcript. A series of stimulating and inspiring courses will be offered exclusively for ELITE students. There are exclusive scholarships, special exchange opportunities, social and scholarly events specially organized for ELITE students.

Details of the entrance, coursework requirements and declaration procedures for the Stream can be viewed at: **www.erg.cuhk.edu.hk/elite**

European Innovation Academy

ELITE students were nominated to participate in European Innovation Academy in Europe, a three-week programme where participants from various universities around the world worked in multidisciplinary teams to start up new IT innovations, mentored and educated by industry leaders and professors.

Summer Experiential Programme in Beijing

Students joined the Yao Class with the elite students of Tsinghua University for credit-bearing summer courses and also exploring the city of Beijing.

Choi Chi Kit Jason

Computer Science graduate under ELITE Stream

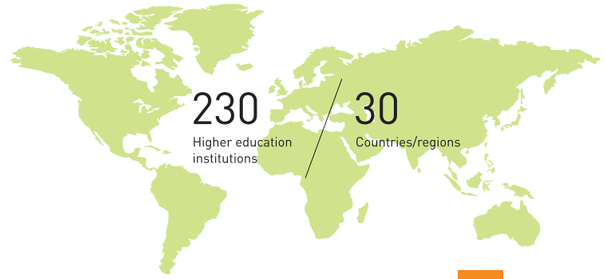
There are no shortcuts in engineering. From computer science to mechanical engineering, all engineering disciplines require both rigorous theoretical knowledge and in-depth practical skills. Having realised this, I am extremely glad to have chosen CUHK Engineering programme. Not only do we get extensive theoretical training in maths and physics, but we could also apply our knowledge through project-based learning. The foundation year, in the meantime, has reinforced my interest in computer science, and certainly has inspired many others to find their true calling. I am also grateful for the special care given to high-achieving students through the ELITE Stream, through which top students are challenged to broaden and deepen their learning scopes. I have met like-minded friends and study partners.

Undergraduate Summer Research Internship

The Faculty has launched the Undergraduate Summer Research Internship programme to support its students to undertake a research project under supervision of professors in summer. This programme gives students exposure to research environment, and grooms them for graduate studies.

International Exchange

The University has exchange agreements with over 230 higher education institutions in 30 countries/regions covering Asia, Australia, Europe, and the Americas. To broaden students' international exposure, the Faculty also offers numerous summer study programmes and internship opportunities.



Professor Sir Charles K. Kao and Lady Kao meet the scholars at the inaugural ceremony of the CUHK Professor Charles K. Kao Scholars Association.

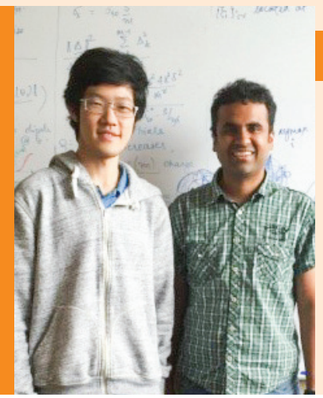
Professor Charles K. Kao Research Exchange Scholarship

To pay tribute to Prof. Charles K. Kao for his achievements in science and technologies and to commemorate his being awarded the Nobel Prize in Physics 2009, the University has set up the Charles K. Kao Scholarship Endowment Fund to support outstanding students of Engineering and Physics to go on research exchange at prestigious institutions overseas.

Bai Ziqian
Computer Science graduate

Recipient of Professor Charles K. Kao Research Exchange Scholarship 2017

It was my great honor to be able to participate this overseas research exchange program, during which I conducted research on the ECE department of Carnegie Mellon University about coded distributed computing for speeding up machine learning computations, supervised by Prof. Pulkit Grover. This wonderful experience not only enhanced my academia background, but also gave me an insightful understanding of the life in USA, and more specifically, a university student's life in Pittsburgh, and plenty of opportunities for making friends with talented minds.



GLOBEX Summer Programme@PKU

The program collaborated with Peking University (PKU) supports engineering students to study both engineering and cultural courses in the College of Engineering, PKU.

Leong Samantha Antonio
Biomedical Engineering graduate

It was in class that I met amazing and brilliant minds. There were students who were not afraid to speak up, challenge new ideas and question unclear concepts. There were students who could combine knowledge from other GLOBEX courses and use it in their own design in presentations. There were friends I made that were brilliant not only in engineering, but also in other fields that I share an interest in. This month-long exchange was a never-ending stream of constant self-improvement. Needless to say, this exchange is very beneficial.

General Education

General Education plays a vital role in the University's mission to provide a balanced undergraduate education for students. It equips students with the intellectual capacity for understanding critical issues, ideas, and values of humanity and of modern society. Engineering students, other than professional knowledge, should also equip themselves with broad knowledge to be successful. The University offers a wide range of general education courses that nurtures students to be educated persons capable of making informed judgment, serving the community and taking up the challenges of this ever-changing world.

Placement and Internship Programme

To assist students in fostering their future career development, the Faculty has initiated the Placement and Internship Progamme (PIP) since 1975. Many students take the option of a one-year industrial full-time placement before they continue their final year of study. They will be engaged in a supervised training in an organization normally for a period of twelve months, during which they will be exposed to a real working environment and will take part in projects working together with experienced engineering professionals. The comprehensive and intensive training provides students with valuable working experience.

The Faculty also collaborates with companies to hold recruitment talks, technology seminars and workshops periodically such that students can keep abreast of the industrial trend.

For more information, please visit the website of Centre for Innovation and Technology, Faculty of Engineering: **http://pip.cintec.cuhk.edu.hk**

List of selected companies participating in the PIP

- Asia Satellite Telecommunications Co. Limited
- ASM Pacific Technology Limited
- CLP Holdings Limited
- Fujitsu PC Asia Pacific Limited
- Google
- Hewlett Packard HK SAR Limited
- Hong Kong CSL Limited
- Hong Kong Deposit Protection Board
- Hong Kong Monetary Authority
- Hong Kong Science and Technology Parks Corporation
- IBM
- ITE Smartcard Solutions Limited
- LinkPOWER Technology Co. Limited
- Microsoft
- MTR
- Octopus Holdings Limited
- Chief Information Office, Office of the HKSAR Government
- OKIA Optical Co. Limited
- Securities and Futures Commission
- Smartone Telecommunications Holdings Limited
- Sun Hung Kai Real Estate Agency Limited
- The Hong Kong Jockey Club
- The Hong Kong and Shanghai Banking Corporation
- The Hong Kong Mortgage Corporation Limited
- The Hong Kong School Net Limited
- Thomson Reuters Hong Kong Limited
- TNS
- VTech Telecommunications Limited

Double Majors and Minor Programmes

Engineering students can flexibly pursue second major or minor programmes according to their orientation and interest in other disciplines such as Business Administration, Economics, Journalism and Music, etc. Students developing multiple talents in combination of the Engineering major and minor programmes, would certainly gain advantages after graduation.

Admission and Curriculum

To offer greater flexibility for students, the Faculty broad-based admission and programme-based admission would run in parallel.

A wide choices of 11 engineering programmes

Computer Engineering Computer Science Information Engineering Mathematics and Information Engineering Mechanical and Automation Engineering Systems Engineering and Engineering Management	**Broad-based admission**
Artifical Intelligence: Systems and Technologies* Biomedical Engineering Electronic Engineering Energy and Environmental Engineering Financial Technology	**Programme-based admission**

Under the broad-based admission line, the Faculty admits applicants with HKDSE qualifications for its six undergraduate programmes, i.e. Computer Engineering, Computer Science, Information Engineering, Mathematics and Information Engineering, Mechanical and Automation Engineering, and Systems Engineering and Engineering Management. Applicants can simply put down JUPAS code: JS4401 for application for the six programmes.

Students in the first year of study will not have a specific major. They will study common Faculty Foundation Courses, and at the same time, explore their interests in different areas of engineering. The first-year experience is particularly important for new students to transit smoothly from high school to university as well as from pupil to self-directed learners, therefore each new student will be assigned an Academic Advisor who plays a crucial role not only as a professor to provide individualized advice on study planning but also help students tackle and mature from such developmental changes and challenges.

Eligible students will be asked to prioritize their preferred majors after completing their first year of study. Their preferences will be the given due consideration in the major allocation process. The Faculty aims to assign as many students as possible to their most preferred programmes, as long as the programmes have sufficient resources and facilities (e.g., laboratory spaces and equipment) to ensure quality teaching and learning. In the academic year 2017-18, almost 88% of students were allocated to their top prioritized programme.

Artificial Intelligence: Systems and Technologies*, Biomedical Engineering, Electronic Engineering, Energy and Environmental Engineering, and Financial Technology adopt programme-based admission.

* Subject to University's approval

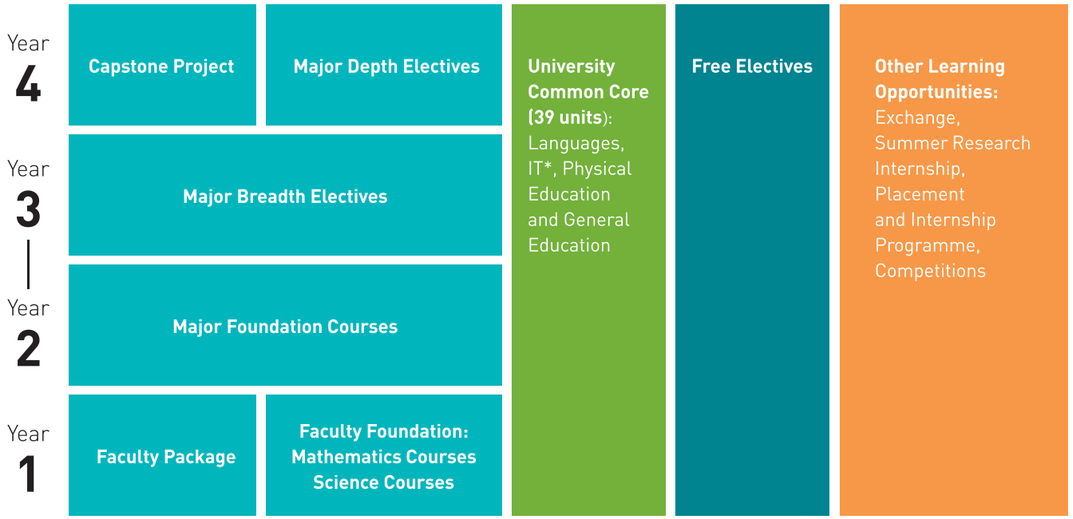
Engineering Undergraduate Curriculum

The curriculum is built on a credit-unit system, and the normative period of study is four years. Students have to complete 123 units and satisfy the University requirements under separate categories. The overall curriculum structure is as follows:

Requirements	Units
University Common Core	**39 units**
• English	9
• Chinese	6
• Physical Education	2
• IT*	1
• General Education	21
Major Programme #	**75 units**
• Faculty Package	9
• Foundation Science Courses	9
• Foundation Mathematics Courses	12
• Major Required and Elective Courses	45
Free Electives	**Remaining units**
Total units for graduation:	**At least 123 units** (except MIEG Programme)

* The 1-unit course will be exempted for Engineering graduates.
# The major requirement of the Mathematics and Information Engineering Programme is 87 units.

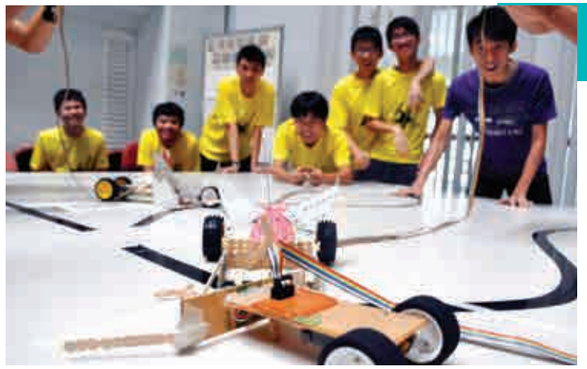
Total units of requirement:
123 units



The Computer Engineering (CE) programme was formally established when the Faculty of Engineering was inaugurated in 1991. The CE programme is a balanced programme with emphasis on both computer hardware and software. Our programme distinguishes itself from others by offering specialized training for students in computer design, mobile embedded systems, microprocessors and very large-scale integrated circuit (VLSI) design.

With the advances in VLSI and microprocessors, innovative products such as smart phones, 3D TVs, digital cameras, supercomputers, computer games etc. are invented continuously. Given the new challenges and opportunities ahead, our CE programme is designed to equip graduates to meet those demands.

Computer Engineering



Programme Features

The CE curriculum consists of courses in the following areas:

- Application: mobile embedded devices, computer graphics, multimedia processing;
- Computer hardware: circuitry theory, logic system design, computer architecture and interfacing, computer arithmetic;
- Computer software: programming, data structure, operating systems, algorithm, software engineering;
- Very large-scale integrated circuit (VLSI) design: Computer-aided design and applications;
- System connectivity: computer network.

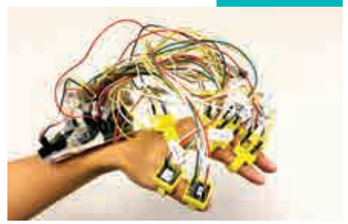
Other advanced topics include:

- Hardware-accelerated bio-related processing;
- Hardware-aided security;
- Multi-core systems and architecture;
- Reconfigurable computing;
- Super-computing.

The Computer Engineering/Integrated Business Administration double-degree option is open to students who are qualified for admission to both programmes. Following the successful completion of a BEng degree in Computer Engineering, students can continue their studies for an additional year to gain a BBA degree.

Career Prospects

Many of our CE graduates have successfully pursued their careers in local and international companies such as The Hong Kong and Shanghai Banking Corporation (HSBC), Intel, Microsoft, IBM and Google. Others have chosen to further their studies in our postgraduate programme or programmes in internationally renowned universities overseas.



Lai Jin Tao, Terry

2016 BEng (Computer Engineering) graduate

Champion, Vice-Chancellor's Cup of Student Entrepreneurship 2015

Second Runner-up, Asia Venture Challenge 2016

I have always been interested in studying electronic devices and it's my dream to become an Engineer. When I entered university, I chose CE as my major without any hesitation, believing that this would help me get closer to my dream. However, at the very first beginning, I only had the goal but no action plan. So I just tried to study hard for high GPA. After having more practice courses like VHDL and Embedded System Design from CE, I found a step in the right direction. These courses required students to design and implement practical devices, which in turn enhanced my passion towards this field, and I started acquiring extra-curriculum knowledge from the internet.

The combination of software application skills with hardware practice abilities is the charming part of CE. I have participated in several competitions from which I benefited a lot. "High Automatic Photographer" is a robot that takes photos via mobile phone, and it received the Second Prize of "Intel Cup Embedded System Contest". "Data Glove" is a motion sensing device which can accurately capture the movement of hands, and it received the First Prize of "The Challenge Cup". As a future information technology practitioner, we may not change the world like Steve Jobs did. But as long as we love our jobs, I believe we can improve the lives around us.

Computer Science

The Computer Science Programme (CS) was launched by The Department of Computer Science and Engineering more than 30 years ago. It is accredited by the Hong Kong Institution of Engineers (HKIE) and has gained international reputation for excellent research and teaching.

Lau Chi Yung Steven
2018 BSc (Computer Science) graduate

I had determined to enrol in a Computer Science programme since I was young. There were a few facts in my mind: the Hong Kong Olympiad in Informatics (HKOI) had been organized in CUHK for years; countless HKOI medallists had enrolled in CUHK (one of them even became a CUHK CSE Assistant Professor in my sophomore year!); the authors of the legendary game Little Fighter 2 (LF2) had graduated from CUHK. Decisions of these legends ascertained my choice of entering CUHK.

With the experience gained at HKOI, I could confidently handle most programming components in the CS programme and immerse myself in more experiential activities like ACM International Collegiate Programming Contest which had given me valuable learning and networking experiences. I met a group of friends in the ELITE stream. Not only did the ELITE stream provide additional coursework, but it also provided a comfortable environment for making new friends thanks to its small class size.

During the summer, while my friends did internships in various companies (some even went big companies overseas!), I chose to work on side projects instead. The prominent ones were "CU Sittong" (http://cusit.org) and "CU Addrop" (http://addrop.cusit.org), with the latter gaining attention of a local media which was encouraging and motivating. I am still playing a role to manage those projects and thankfully both of them still have active users. All these pieces together had polished my life goal. After graduation, I work as a freelance developer. I expect to work in this field for some time and make good use of the flexible schedule to further enrich myself. If I am to give an advice to the juniors, I would say: explore when you're lost, settle when you're found.

Programme Features

The Computer Science programme covers the following areas:

- Artificial Intelligence
- Computer and Network Security
- Computer Networking
- Computer-aided Design
- Databases
- Digital Hardware Technologies
- Information Systems
- Internet
- Multimedia Technology
- Programming Languages
- Software Engineering
- Theoretical Computer Science

The double-degree Computer Science/ Integrated Business Administration option is open to students who are qualified for admission to both programmes. Following the successful completion of a BSc degree in Computer Science, students can continue their studies for one additional year to gain a BBA degree.

Career Prospects

Over the years, the Department of Computer Science and Engineering has built up a large alumni network in the computer industry of Hong Kong. Many of our graduates have taken up important positions in various organizations and companies, such as the HKSAR Government, The Hong Kong and Shanghai Banking Corporation Limited (HSBC), Intel, Microsoft, IBM and Google. Through this network, our graduates can enjoy comparative advantage in professional career development. Apart from choosing to work in the industry, some graduates have entered our Master and Doctoral programmes or similar programmes in world-renowned universities overseas for postgraduate education.

The Information Engineering Programme (IE) is designed to nurture and educate engineering leaders for the Information World of today and tomorrow. We offer all-round training in the areas of communications systems and networks, Internet engineering, cybersecurity, mobile and cloud computing, multimedia processing, big data, as well as software engineering. Our professors are dedicated educators and world-class researchers. Many of them have extensive experience with leading research institutions world-wide before joining the department.

Information Engineering

Programme Features

Information Engineering encompasses the generation, distribution, analysis and application of information in engineering systems. Key areas of study include:

- Telecommunications: Optical Networks, Wireless Communications, Analog and Digital Circuits, Switching Systems, Teletraffic Theory, Network Coding, Information Theory;
- Internet and Applications: Internet Protocols and Systems, Network Software Design and Programming, Online Social Networks, Internet of Things, Network Economics, Mobile Networking;
- Big Data and Multimedia: Image and Video Processing, Multimedia Coding, Web-scale Information Analytics, Programming Big Data Systems, Building Scalable Internet Services, Social Media and Human Information Interaction;
- Cyber Security: Applied Cryptography, Web Programming and Security, Digital Forensics, Security and Privacy in Cyber Systems.

Students may choose to specialize in one or more of the 5 streams - ***Big Data***, ***Communications***, ***Cyber Security***, ***Internet Engineering*** and ***Enrichment Streams***. The programme is accredited by the Hong Kong Institution of Engineers (HKIE).

Career Prospects

IE graduates are equipped with solid engineering knowledge and analytical problem solving skills to create innovative solutions for important practical problems. Our graduates have embarked on successful careers in companies like Morgan Stanley, HSBC, Smartone, IBM, MTR, Google, and more, or have started their own business. Each year, around 10% of our graduates further studies overseas or locally. Their destinations include top schools like CMU, MIT, Stanford, Berkeley, Caltech, Cambridge, and more.

Wang Jingyu

2017 BEng (Information Engineering) graduate
Currently a Master student at Carnegie Mellon University

Undergraduate study at IE has laid the solid foundation for my further career development. Here I could choose from a broad range of courses to tailor my learning experience. I was opened to courses from multimedia coding and processing, big data analytics to cybersecurity, which gave me a taste of how things work in different aspects of technology.

While some of the courses focus more on theory, there are other courses offering real-world development experience, such as building a web service from scratch. This experience turned out to be really helpful for career development. Apart from in-class study, I also participated in the undergraduate summer research program, which brought me opportunities to try solving research problem leveraging what I have learned from courses.

Math is our passion and Engineering is our profession.

Mathematics and Information Engineering

This programme is offered jointly by the Departments of Mathematics and Information Engineering to provide students with diversified and advanced knowledge in the interdisciplinary study of mathematics and engineering. This demanding and boutique programme aims at educating a new generation of cutting-edge information scientists who are well-trained in the basics of communications, computer networks, algorithm design, and formal mathematics.

Programme Features

The programme places strong emphasis on research and encourages independent studies under the supervision of professors from both Departments. Students will have opportunities to take up research work during their later years of study and a significant fraction of graduates from this small program get to pursue graduate studies in the top schools worldwide.

Career Prospects

The career prospects of graduates are very promising because of the unique combination of abstract mathematical thinking abilities and solid engineering know-how for tackling problems. Career opportunities cover a diversity of fields including (but not limited to):

- **Research** – pursue postgraduate studies in areas related to mathematics, information engineering, or computer science;
- **Information analysis** – analyse and process information in quantifiable forms for the finance and banking industries;
- **Engineering** – engineering careers related to networking, security, and system management.

Chung Shing Hin

2017 BSc (Mathematics and Information Engineering) graduate

Currently a student of MSc Computational Mathematical Finance programme at University of Edinburgh

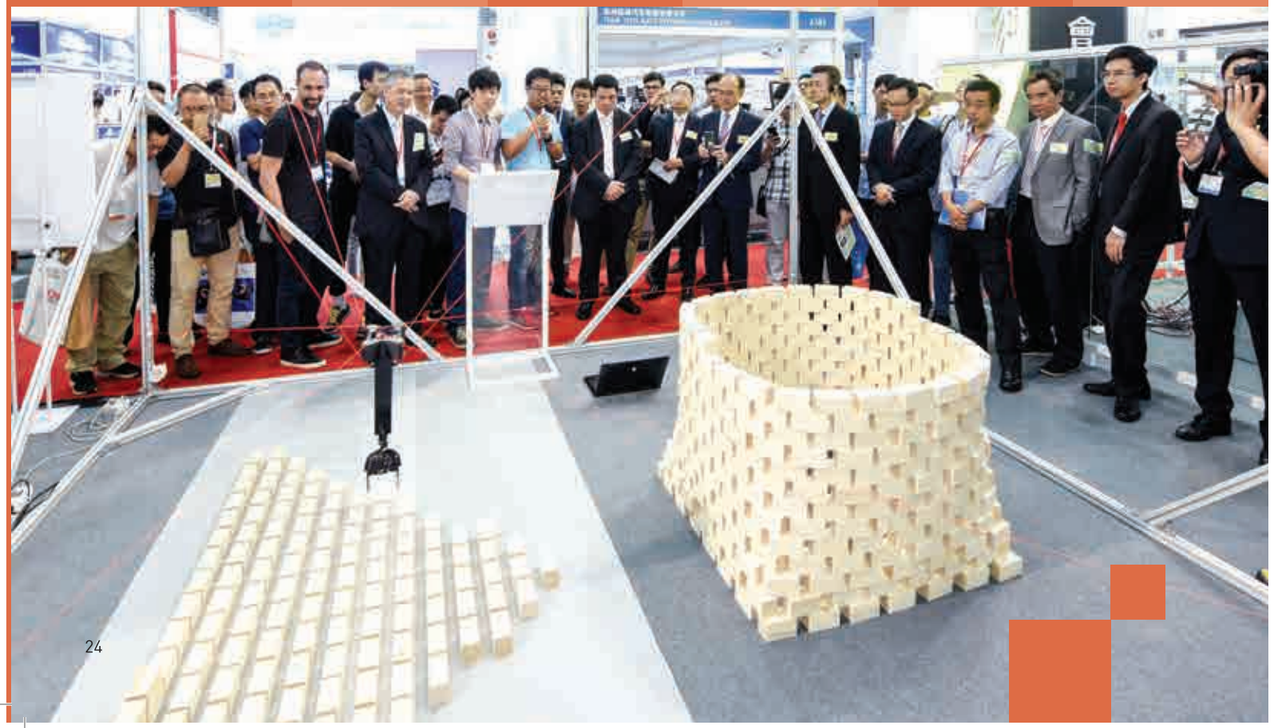
In the era of big data, Information Engineering and Mathematics have become more and more important. While Mathematics equips you with strong logic and excellent problem-solving skills, Information Engineering focuses in application of Mathematics in data related aspect, such as information theory, data analytics etc. The pedagogical approach in this programme is from basic to advance. It involves a lot of group projects which train your capacity in leadership. You can also gain valuable research experience. Training in IE and Math helps me to build a solid foundation for my future career in the computational finance industry. MIE will be your best option if you love both Engineering and Mathematics.

The Mechanical and Automation Engineering Programme emphasizes the impact of modern automation technologies on current and future developments in the field of mechanical engineering. The Programme stresses a balanced curriculum in both basic theory and hands-on practice, and covering subject areas such as mechanics and materials, thermodynamics, mechanical design, manufacturing processes, mechatronics and robotics.

Mechanical and Automation Engineering

"Engineers should press forward with development to meet the diversified needs of people"

– Harold Chestnut (1981)
American electrical engineer, control engineer and manager at General Electric



Programme Features

The curriculum covers the fundamental knowledge in the areas of mechanical and automation engineering, including mechanics and materials, thermodynamics, control, manufacturing, and electronics. Students can pursue more in-depth knowledge in the subjects of their choices, such as computer-aided design and graphics, robotics, mechatronics, intelligence system, engineering optimization and MEMS. Students may choose to specialize in one of the following three streams or not to specialize in any stream:

- Design and Manufacturing
- Mechatronics
- Robotics and Automation

Courses in business, technical communications, engineering ethics, design application and final year projects are included in the programme to enhance students' training as professional practitioners. The Department also provides summer internships, work-study programmes and international exchange opportunities for its undergraduate students.

Career Prospects

Upon graduation, MAE students find career opportunities as mechanical engineers, production engineers, control engineers, design engineers and other professions that rely on the programme's engineering training. They can also pursue graduate studies in their specialized areas of interest in Hong Kong or overseas.

Lam Miu Ling, Cherry

2000 BEng, 2002 MPhil, and 2008 PhD (Mechanical and Automation Engineering) graduate

Associate Professor, City University of Hong Kong

I am a media artist and associate professor in School of Creative Media at City University of Hong Kong. I received my BEng, MPhil and PhD degrees all from the Department of Mechanical and Automation Engineering with a focus on robotics and wireless sensor network research. I was an engineer in Hong Kong Aero Engine Services Limited before the PhD Programme. Upon PhD graduation, I was awarded a prestigious fellowship by the Croucher Foundation to support my postdoctoral research at the California Nanosystems Institute at UCLA. My current research projects focus on bioinformatics and physical intelligence.

As a media artist, I create artworks on the cutting-edge technologies and at the intersection of art, technology and science. The trainings on computer science, engineering design, and electronics obtained from MAE Department equipped me to explore new art dimensions by introducing novel ingredients to media arts. The MAEG Programme is not only practical for the development of engineering perspectives and researches, but also offering the possibilities to bridge across multiple disciplines.

Ho Chung Yan

2016 BEng (Mechanical and Automation Engineering) and 2017 BBA (Integrated BBA) graduate

Graduate Engineer, Airport Authority Hong Kong

It is my passion in the aviation industry that motivated me to become an engineer. During my five-year study, I have learnt much practical knowledge in engineering field including robotics and material engineering. I have participated in the Robocon HK competition 2016 which utilized much of what I have learnt and resulted us in championship. Also, I could further apply them in my internship in the air cargo terminal. My energy management skills were applied on the cooling fan installation project and the theory of electronics was important when handling with the conveyor system.

Besides, I seized the opportunities provided by MAE to explore more beyond our study in CUHK. In 2015, I went on an exchange program in the Engineering Department in University College London to learn more engineering management skills. Furthermore, I joined the double-degree option majoring in Marketing, IBBA as well to train my mindset to be more innovative which is essential for an engineer. After graduated, I am now working in the Airport Authority Hong Kong as a graduate engineer which fulfilled my passion. In my current career, the tasks I need to handle are more complicated and are not only related to the engineering discipline.

Systems Engineering and Engineering Management

The Department of Systems Engineering and Engineering Management utilizes information technologies and mathematical tools to tackle problems that arise in the study of complex man-made systems, such as supply chains, financial markets, logistics management, transportation networks, and business operations. Our undergraduate programme offers students a well-rounded education that equips them with the knowledge and skill sets to compete not only in Hong Kong – which has a predominant service industry and is a major financial and logistics centre – but also in the knowledge and technology-based global economy.

Programme Features

Our undergraduate programme offers intensive training in the fundamentals of information systems, decision sciences, technology management and entrepreneurship. In addition, the programme offers the following four specialization streams:

- Business Information Systems — focuses on the design, analysis and management of effective systems for storing, communicating and extracting information, which form the backbone of modern-day business and industrial operations.
- Financial Engineering — emphasizes on the design and analysis of innovative financial instruments and strategies, as well as the use of advanced quantitative techniques and information technologies to manage and execute those strategies.
- Logistics and Supply Chain Management — concerns with the coordination and management of material, financial and information flows of an enterprise's operations.
- Service Engineering and Management — a newly introduced specialization, which combines interdisciplinary knowledge, such as information technologies, cognitive science, economics, marketing, etc., to support operations and create value in the ever-growing service industry.

Career Prospects

Training in Systems Engineering and Engineering Management provides exposures to interdisciplinary knowledge and a solid understanding of both technical and economic aspects of complex systems. Our graduates typically take up positions in logistics management, financial analysis, consulting, information technologies and related fields. Many are currently enjoying very successful careers in organizations such as HSBC, Deloitte, IBM, P&G and Kelly Logistics.

Lu Le, Helen

2018 BEng (Systems Engineering and Engineering Management) graduate

Admitted to Master of Science in Operations Research, Georgia Institute of Technology

As a fresh graduate, I appreciate my study life in SEEM. There are four streams in SEEM for undergraduates, and students could study a specific stream to make themselves proficient. Besides, we also have the chance to take Ph.D.-level courses for challenges, if we are interested in further and deeper postgraduate study. What's more, lectures, FYP projects, seminars and courses in SEEM combine current advanced computer and information technologies well, like AI, Big Data and Blockchain. Because of these cutting-edge information, graduates become competitive in their future study and work. Thanks to the instruction and recommendations from my mentors and supervisors in SEEM, I have been successfully admitted to the Master of Science program in Operations Research at Georgia Institute of Technology.

Ying Yau Kit, Stanley

Systems Engineering and Engineering Management student (Year 5)

SEEM is always my first choice. The programme features an excellent balance between technology and management. In this era where technology is becoming increasingly relevant in everyday business, SEEM offers students insights into both engineering systems design, data analytics and business management. Knowledge in these areas could not only help students with job applications but also equip them the leadership capabilities and essential skill sets for entrepreneurial pursuits. Having received good results in multiple international, national business, entrepreneurship and engineering competitions, I would definitely attribute my achievements to the learnings and training I receive from SEEM.

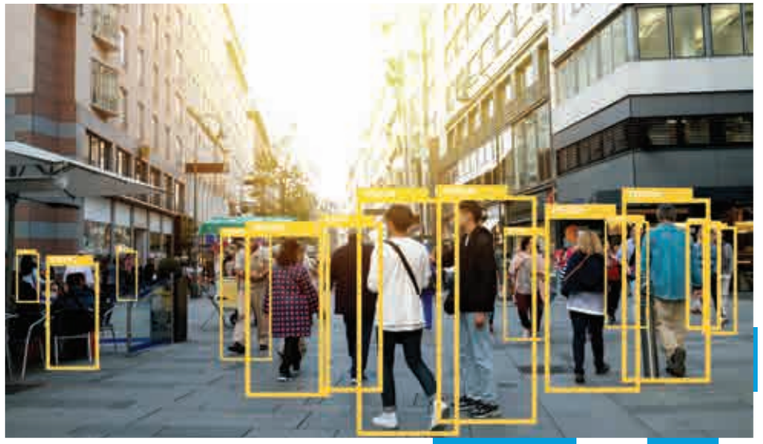
Artificial Intelligence: Systems and Technologies*

Programme Features

Artificial Intelligence (AI) is an emerging engineering discipline that focuses on the technological innovations in enabling computing systems to behave and discover new knowledge with human-like intelligence. It is a broad area that covers many specializations, such as machine learning, deep learning, knowledge representation/ inference, logic/constraint programming, human-computer interactions, natural language processing, big data analytics, etc. It has evolved in multiple disciplines, such as finance, medicine, manufacturing, robotics, multimedia, telecommunications, computational linguistics, etc. On the other hand, AI imposes critical challenges on how to innovate and design solid and rigorous solutions for AI, as well as how to properly address the ethical and societal issues with AI.

AIST aims to equip students with the capabilities of designing and implementing AI systems and technologies that can analyze, reason about, and infer knowledge from massive information, backed by rigorous foundations of data structures, statistics, algorithms, distributed computing, etc. Such capabilities enable students to develop cutting-edge AI solutions that are of practical interest to academics, industry, and society. The programme offers four optional specialised streams for students to choose according to their own interests:

- Biomedical Intelligence
- Intelligent Multimedia Processing
- Large-scale Artificial Intelligence - Theory and Systems
- Intelligent Manufacturing and Robotics



Career Prospects

AIST is designed to meet today's tremendous demand of well-trained talents in AI and related specializations. There is now a manpower shortage of AI specialists in both local and global employment markets. According to the Innovation and Technology Bureau, the HKSAR Government's policies in innovation and technology, such as re-industrialisation, the expansion of the Science Park in Tseung Kwan O Industrial Estate, and the establishment of HK-Shenzhen Innovation and Technology Park in Lok Ma Chau Loop, are expected to create 50,000 jobs for people with knowledge and skills in high-end technologies. For this reason, CUHK aims to train talented AI engineers/scientists for the following industries: biomedical engineering/science, information and computing technologies, manufacturing and robotic, as well as intelligence multimedia processing for various Internet companies.

* New programme subject to University's approval

Biomedical Engineering

Biomedical engineering is an interdisciplinary field in which engineering and technology are innovatively applied to solve biological and medical problems for the benefit of mankind. The Biomedical Engineering programme is offered by the Faculty of Engineering in deep collaboration with Faculty of Medicine. Students not only benefit from learning at the forefront of the engineering and medical fields through the programme's core courses, but also enjoy the flexibility to choose from a wide variety of electives that allow them to focus on areas critical to their chosen careers.

The field is responsible for the development of medical engineering technology such as MRIs, brain-computer interface cardiac pacemakers, orthopaedic implants, rehabilitative devices, medical robotics, minimally-invasive endoscopes, etc. Biomedical devices are being developed at the micro- and nano-scale to enable diagnosis and therapeutics at the molecular and cellular levels. Students can take advantage of the breadth of cutting-edge biomedical engineering research available on campus through collaborative research in the Faculties of Engineering and Medicine.

Technology and innovation is transforming our Health. Biomedical Engineers are enabling the transformation.

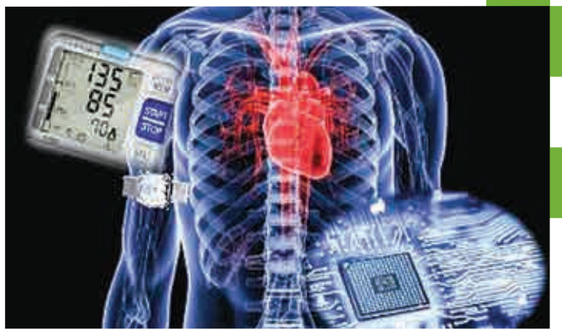
Programme Features

The programme's specialty areas are:

- Medical Instrumentation and Biosensors
- Biomedical Imaging, Informatics and Modeling
- Molecular, Cell and Tissue Engineering

Career Prospects

BME graduates work in hospitals, universities, government departments, other public organizations as well as industries. The careers available to programme graduates cover the entire value chain of BME, namely research and development, manufacturing, quality assurance, consultancy, distribution and sale, clinical engineering, regulatory affairs and entrepreneurship in technology. Graduates are also well equipped to pursue advanced study in engineering and biomedical sciences. Some graduates are also pursuing their careers in business, law and medicine.



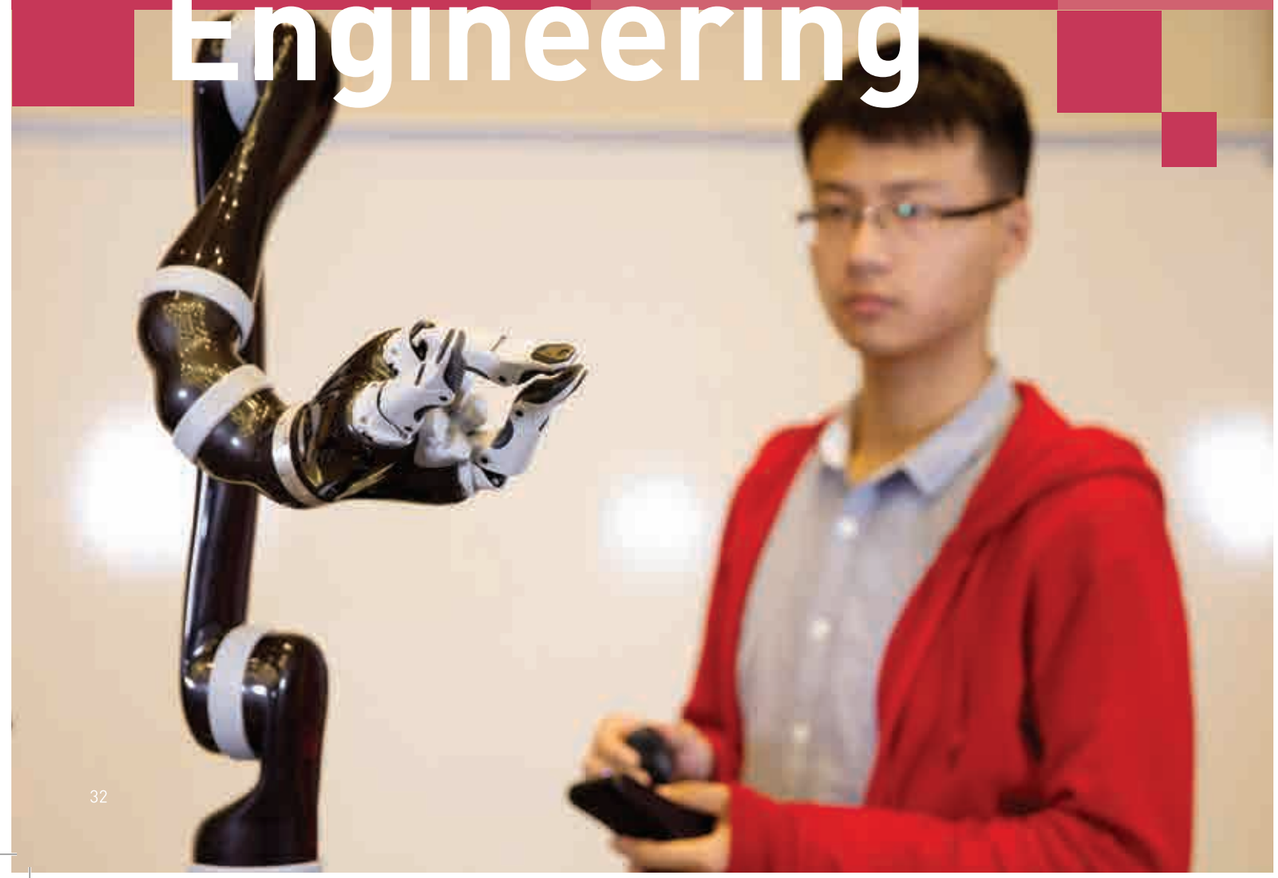
Sin Ka Man, Carmen
2017 BEng (Biomedical Engineering) graduate
Assistant Engineer, Electrical and Mechanical Services Department, HKSAR Government

In this day and age, the awareness of the safety, efficacy, and quality of medical devices in Hong Kong is always increasing. This in turn has given rise to a need for new legislation concerning medical devices, and therefore more opportunities for the likes of me and others studying BME. The BME programme educates students on a variety of theoretical concepts concerning engineering, biology and medical sciences. This, coupled with the practical skills gained in courses such as Global Regulatory Affairs and exposure to a clinical environment, has led me to a career as a biomedical engineer, acting as a middle man between medical and engineering experts.

"There's nothing I believe in more strongly than getting young people interested in science and engineering, for a better tomorrow, for all humankind."
– Bill Nye

The Department of Electronic Engineering was established in 1970 by Prof. Charles Kao, former Vice-Chancellor of CUHK and a 2009 Nobel Laureate who pioneered the use of optical fibres in communications. The Electronic Engineering programme (JUPAS code: JS4434) features a dynamic and adaptive curriculum that covers a wide range of topics, including integrated circuits and electronic devices, opto-electronics and optical communication, microprocessors and computer architecture, telecommunication and wireless systems, multimedia and signal processing, medical instruments and telemedicine, electronic materials, and nanotechnology. The courses offered are designed to convey both theoretical and practical knowledge and provide balanced training in both hardware and software skills. The department was ranked number 1 in Hong Kong by QS World University Rankings by Subject 2016 and by ShanghaiRanking's Global Ranking of Academic Subjects 2017.

Electronic Engineering



Programme Features

The Electronic Engineering (EE) Programme provides the broadest and most foundational engineering training for modern society and generates rewarding career opportunities. The courses EE offered are designed to convey both theoretical and practical knowledge and to provide balanced training in both hardware and software skills. The major topics of study include:

- Integrated circuits
- Wireless and microwave engineering
- Digital signal processing and communications
- Multi-media technology
- Semiconductor devices and nanotechnology
- Photonics
- Medical devices and systems

The work-study scheme in the Electronic Engineering programme allows students to spend one year working full-time in selected electronics or IT companies. Under the Personal Tutor scheme, professors meet regularly with students to provide advice on their academic and personal development. Thanks to the generous support and patronage of professional societies, local industry and distinguished alumni, the department is able to offer a large number of scholarships to our undergraduates.

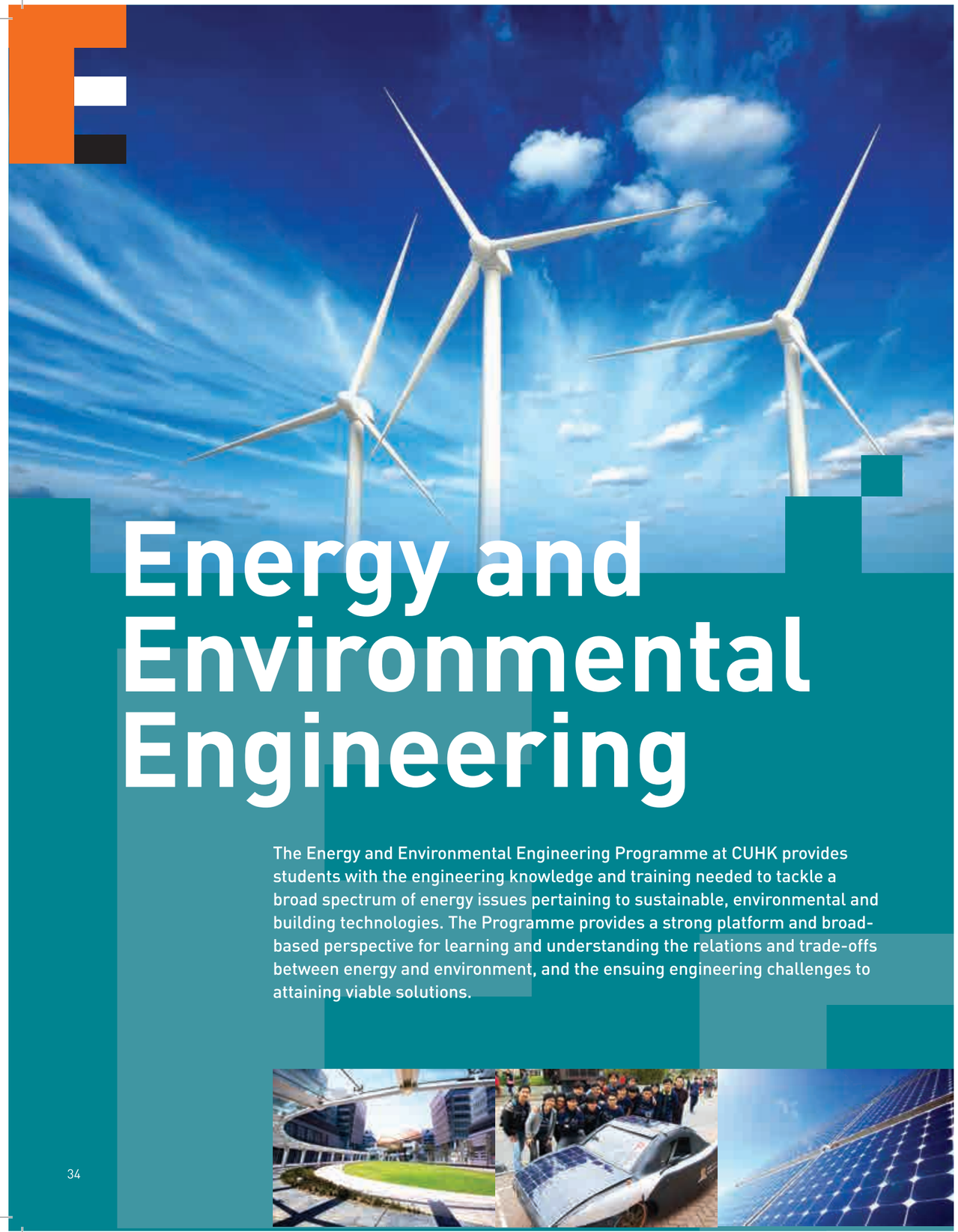
Career Prospects

Programme graduates pursue successful careers in a wide range of hi-tech industries and business sectors including telecommunications, computer hardware, information technology, e-commerce, technology services, industrial manufacturing, and product design and development. Some of the graduates also choose to pursue postgraduate studies in local or overseas institutions.

Chan Joi Hei, Joshua
2017 BEng (Electronic Engineering) graduate
Graduate Engineer, MTR Corporation Limited

After my graduation from CUHK EE, I embarked on the Graduate Development Programme in MTR. As a Graduate Engineer, I am privileged to obtain ample opportunities in developing the managerial skills and technical knowledge ranging from maintenance strategies for rolling stocks and infrastructure to the stringent design criteria for different engineering systems during the 2-year cross-functional rotation. The past holistic training in CUHK EE helps me pick up new knowledge in workplace more quickly and comprehensively to embrace the cutting – edge technologies and proactively propose value-added solutions in a pursuit of delivering a safe, reliable and efficient railway service to Hong Kong's commuters.

I used to think that engineer was simply a career. It now turns out inspiring me to believe that engineer is a meaningful job carrying the commitment of shaping a better world.



Energy and Environmental Engineering

The Energy and Environmental Engineering Programme at CUHK provides students with the engineering knowledge and training needed to tackle a broad spectrum of energy issues pertaining to sustainable, environmental and building technologies. The Programme provides a strong platform and broad-based perspective for learning and understanding the relations and trade-offs between energy and environment, and the ensuing engineering challenges to attaining viable solutions.

Programme Features

Interdisciplinary by design, the Programme strongly leverages the relevant expertise and capabilities offered by CUHK as a comprehensive university. In addition to the fundamental knowledge of energy principles, technologies and systems, the Programme features a number of required and core elective courses co-designed with the Earth System Science Programme and the School of Architecture, and a host of elective courses from the Environmental Science Programme and the Department of Geography and Resource Management, for a broader and in-depth education on the environmental impact of pollution in urban settings. Students are able to pursue any one of the three streams of study according to their personal and career interests: the Sustainable Energy Technology stream for enhanced coverage of renewable energy generation, system design, storage, distribution and management; the Green Building Technology stream for fundamental knowledge of environmental performance assessment and energy management of urban buildings; and the Environmental Engineering stream for principles of natural and built environments, and air pollution monitoring and control challenges.

The Programme also includes courses in technical communications, engineering ethics, design application and final year projects to enhance students' training as professional practitioners. Students are able to participate in and benefit from the many campus and community projects and research topics offered by the university-based institutes and units on environmental studies and sustainable development. They can also enjoy ample opportunities for summer internships, work-study programmes and international exchanges.

Career Prospects

The knowledge and skills gained by students of the Programme will afford them strong career prospects. They will be employable in current and emerging areas of energy systems, environmental monitoring and control, sensor instrumentation, and smart and green building technologies, among other areas. They can land jobs in government, electric companies and power grid enterprises, building and construction industries, consulting firms and green groups, renewable technology companies and vehicle industries, to cite just some of the possibilities. They can also pursue postgraduate studies in their specialized areas of interest in Hong Kong or overseas.

Wong Hoi Yi, Jane
2017 BEng (Energy Engineering) graduate
Graduate Trainee, CLP Power Hong Kong Limited

Energy is invisible, but you can find it everywhere. Upon the rapid growth of population and urban development, from the energy source to the process of generating and using energy effectively, all these become essential topic to me. That's why I study Energy Engineering which covers all the critical energy and environmental-related issues, such as renewable energies, battery storage, green building design and energy efficiency of electrical transmission.

Apart from the knowledge on architecture, mechanical and electronic design, the energy programme fully equips students with many hands-on experiences on the courses, solar car competition, exchange programme, internship and solid supports from the professors. After graduation, I find all these trainings and practical experience did strengthen my technical skills, so as to get the desirable job and continue to pursue my career in the engineering field.

Wong Wai Kun, Carol
2017 BEng (Energy Engineering) graduate
Start up in business

Being a citizen of the global village, I am passionate in making a better world by energy and environmental aspect. CUHK Energy Engineering programme offers great diversity of courses which equipped me to be engineering professional. Energy, building service, environmental science and related technologies are taught and investigated in courses which are specialized and unique among the other undergraduate programmes in Hong Kong.

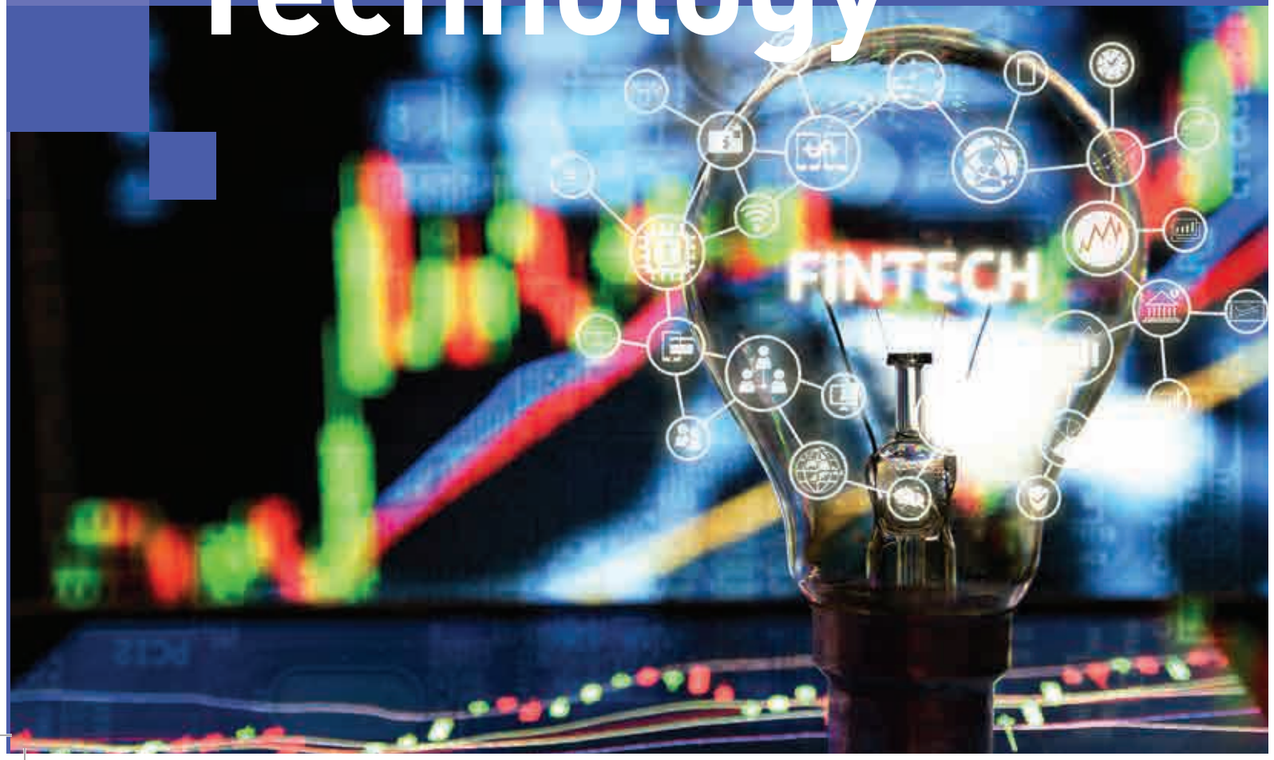
Participating in one-year placement has broadened my horizon and equipped me with workplace skills, which is a valuable experience. Energy and environmental problems are always the most challenging crises for the globe.
As a graduate of CUHK energy engineering, I am contributing to environmental protection. The all-rounded courses not only provided me with knowledge combined with mechanical, chemical and electrical background, but also developed my creativity and problem-solving skills as an engineer. I am so glad that I have taken Energy Engineering as my major in CUHK.

Tel: (852) 3943 8337 / Email: dept@mae.cuhk.edu.hk / www.eeen.cuhk.edu.hk

Financial Technology (FinTech) is an emerging engineering discipline that focuses on employing technological innovations in financial practices. Leveraging on the cutting-edge developments of engineering, in particular information technology and data sciences, it demonstrates an unprecedented potential to revolutionise the nature of traditional financial service industry in a fundamental way.

The advents of digital currencies, crowdfunding platforms, robot investment advisors, big data analytics, and algorithm-driven trading strategies profoundly impact the means and behaviors of how people make payments online and offline, store and manage their wealth, and finance their businesses. On the one hand, FinTech significantly improves end-users' service experience, making the financial industry more inclusive and productive. On the other hand, it also poses a crucial challenge to understanding and analysing its social benefits and risks economically, technologically, and legally, so as to foster its healthy development.

Financial Technology



Programme Features

The mission of the FinTech programme is to educate and equip students with essential knowledge and capabilities to apply technological innovations to financial services, and to nurture leadership and entrepreneurship for the next generation of financial talents in support of Hong Kong's endeavor to grow into an international FinTech hub. After four years of all-round education, students are expected to be able to:

- derive and develop financial and managerial insights from big data;
- design and engineer innovative solutions to meet financial service needs;
- optimise financial decisions in complex business environments; and
- understand and analyse the social, economic, security, and legal impacts of their solutions.

This new programme is built upon a strong collaboration between CUHK Faculty of Engineering and the Faculties of Business Administration, Law, and Social Science. It offers multi-disciplinary training, which will equip students with both solid technological education in engineering innovations and insightful understanding of the business and legal environment for FinTech. New course offerings, including Financial Infrastructures, E-Payment Systems and Cryptocurrency Technologies, Internet Finance, Financial Informatics, bring to our undergraduate education state-of-the-art developments in the field for the first time. Closely collaborating with the Hong Kong Monetary Authority (HKMA) and Hong Kong Applied Science and Technology Research Institute (ASTRI), the programme also organises internships and overseas exchange to encourage students to apply theories to practices.

Career Prospects

Programme graduates will be ideally suited for positions that require strong quantitative and technological skills in the financial service industry. Prospective career opportunities include investment and commercial banking, insurance, asset management, Internet finance, government regulatory agencies, FinTech startups, and so on. Graduates can also pursue further advanced studies in finance, management sciences and engineering, computer sciences, information engineering and related fields.

Dicky Chandra
FinTech student (Year 2)

The FinTech programme aims to apply technological innovations in tackling financial issues. As I am passionate about business and technology, I believe the FinTech programme offered by CUHK enhances my knowledge diversely. The curriculum provides not only solid knowledge in both technological and business aspect, but also the legal environment associated with FinTech. The FinTech programme provides numerous incentives for students to learn more, for example scholarships, career talks, seminars, and many individual consultation with the professors.

Chiu Long Kwan, Felix
FinTech student (Year 2)

Professor Chak Wong, our Professor of Practice in Financial Technology, conducted debating sessions that aim to train our critical thinking and communication strategies with economic and political contexts. That has also contributed to our training for job interviews. Ultimately, we will expect ourselves to be an all-round person specializing in the FinTech and relevant fields.

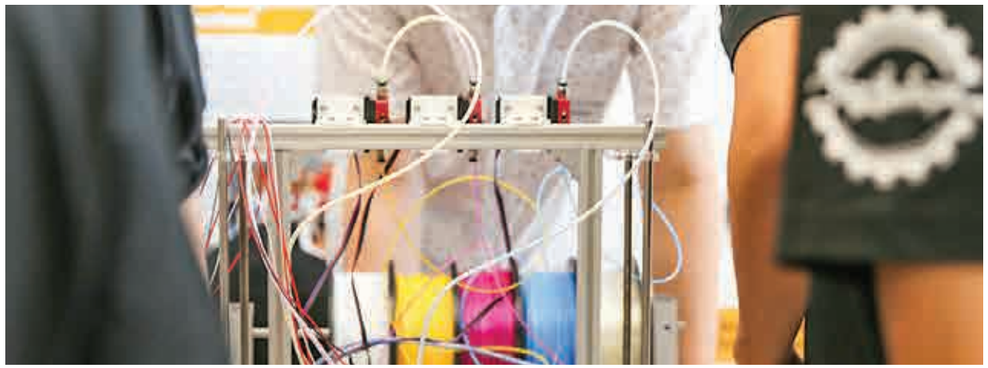
Li Yi Wen
FinTech student (Year 2)

We took the Faculty foundation courses as well as additional classes tailored for FinTech students that not only broaden knowledge but also sharpen critical thinking and analytical skills. The FinTech programme also organized multiple talks and seminars to give us a better picture of what the FinTech industry entails.

Double Degree Option

Engineering and Business Administration Double Degree Option

Hong Kong has transformed into a technology-enabled service economy, and the demand for engineers has changed. There are growing desires for many enterprises from small scale to large corporates like banking and finance to recruit professionals with IT and related expert knowledge. Students graduated from this double degree option will be equipped with both strong technical and business knowledge, making them extremely competitive in the job market.



Programme Structure

Eligible students could pursue their first bachelor degree at the Faculty of Engineering with a selected major (AIST*, BMEG, CENG, CSCI, ELEG, EEEN, FTEC, IERG, MAEG or SEEM), and after completing the first degree, pursue the second bachelor degree at the Faculty of Business Administration for one year. Students would be awarded a Bachelor of Engineering and Bachelor of Business Administration (BBA) in Integrated Business Administration (IBBA) upon completion of both programme requirements.

Features

- No admission quota
- Students will first complete the Engineering degree before completing their second degree in the last year on self-financed basis. Students will need to take some Business Administration courses during the study period of the first degree.
- Students eventually do not join the second degree in Integrated Buisiness Administration will be awarded a Minor in Business Administration in recognition of the credit units earned from the BA courses if they have fulfilled the relevant academic requirements of the IBBA minor programme.

Website: **www.erg.cuhk.edu.hk/erg/ergbba**

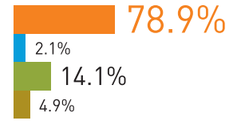
* New programme subject to University's approval

Career Prospects

Graduates of the Faculty of Engineering of The Chinese University of Hong Kong have always been put on the top priority by employers. The multi-disciplinary and multi-talent training offered by the Faculty prepares its students best for a wide magnitude of career choices both in the business and government sectors. Quite a number of engineering graduates started their own business and become successful entrepreneurs. Apart from this, many of our graduates have pursued their postgraduate studies and taken up the teaching and research work in local and overseas prestigious institutions.

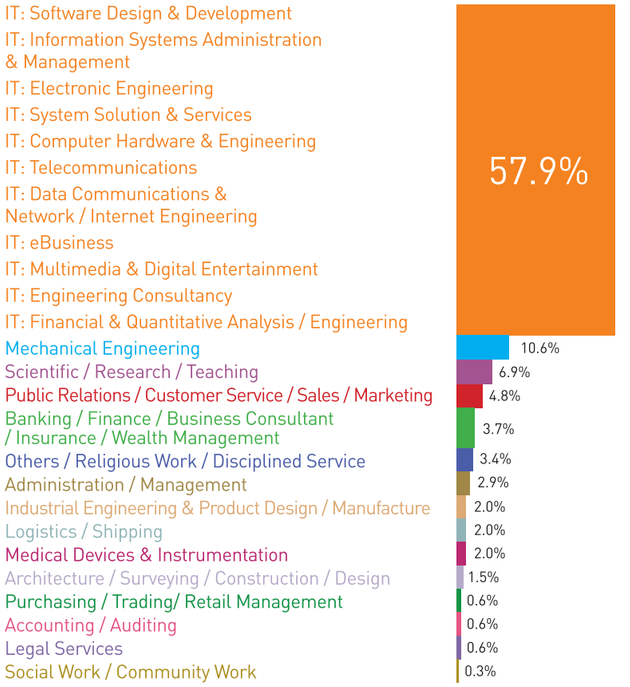
Job Statistics of Engineering Graduates 2017

Employment Status



Sectors of Employing Organizations

Career Fields



Successful entrepreneurs' story —
Pushing the frontier of electric vehicle development

Electric vehicles (EVs) are getting more popular among Hong Kong drivers. From the figures provided by the HKSAR government, the quantity of EVs has soared from less than 100 in 2010 to approximately 5,300 in 2016. Since many countries are promoting the reduction of greenhouse gases, the development of EVs has a promising future. The Hong Kong government introduced EVs in 2009. Laurence Chan and Martin Tsang, graduates of the Department of Electronic Engineering, CUHK, seized the opportunity and founded EV Power Group in 2010 to tap into the EV charging business. Currently, EV Power is the top charging service provider in Hong Kong.

Admissions

JUPAS Admission

Secondary school students taking the Hong Kong Diploma of Secondary Education (HKDSE) Examination should apply for admission through the Joint University Programmes Admissions System (JUPAS). The JUPAS code of CUHK Broad-based Engineering Programme is JS4401.

HKDSE applicants should satisfy the following entrance requirements:

Admission is based on the Best 5 HKDSE subject results with subject weighting.
For details of subject weighting, please refer to the table below:

Minimum Admission Requirement	Subject	Level	Weight
Core Subjects	Chinese Language	3	1
	English Language	3	1
	Mathematics	3	1.5
	Liberal Studies	2	0.5
Two Elective Subjects	One Science subject from the following: Biology / Chemistry / Combined Science / Physics / Mathematics Extended Module 1 or 2	3	1.5 (1.75 for M1/M2, if applicable)
	Preferred subjects: Biology / Chemistry / Combined Science / Physics / Information and Communication Technology / Design and Applied Technology / Mathematics Extended Module 1 or 2		Preferred subjects: 1.5 (1.75 for M1/M2, if applicable)
	Any other subjects		Any other subjects: 1

In addition to the requirements above, bonus points will be awarded to the 6th and 7th subjects, if any.

2018 Admission Grades of HKDSE Examination *(for reference only)*

Subjects	CHIN	ENGL	MATH	LBST	SCI Elective	Elective 2 (applicable to M1/M2)
Lower Quartile	3	3	5	3	5	4

Non-JUPAS (Local) Admission

Local applicants holding other qualifications can apply through the non-JUPAS admission scheme. These qualifications include Associate Degree/Higher Diploma, HKALE, GCE-AL, IAL, IB, SAT/AP and other overseas qualifications for university admission. Applications will be assessed on a case-by-case basis. Please refer to the website of Office of Admissions and Financial Aid for further information.
(**http://admission.cuhk.edu.hk/non-jupas-yr-1/requirements.html**).

International Students Admission

Applicants who require a student visa to study in Hong Kong can apply through this scheme. Applicants must possess relevant high-school or post-secondary qualifications, which include GCE-AL, IAL, IB, SAT/AP, GSAT (Taiwan), OSSD (Canada), ATAR (Australia), and other relevant qualifications. Applications will be considered on a case-by-case basis. Please refer to the website of Office of Admissions and Financial Aid for details.
(**http://admission.cuhk.edu.hk/international/requirements.html**).

Admission with Advanced Standing

A non-JUPAS (local) or international applicant may apply for "Admission with Advanced Standing" if he/she meets specific requirements with relevant qualifications (including GCE-AL, IAL, IB, HKALE, Associate Degree/Higher Diploma). For students admitted with Advanced Standing, the minimum number of units for graduation may be reduced by up to 24 units (normative period of study may be shortened by up to one year).

Senior-Year Admission for Sub-degree Holders

Applicants holding the qualification of associate degree or higher diploma could apply for direct admission to senior year places. Applicants admitted to the senior year places are generally expected to complete their undergraduate studies in two years. For the 2019-20 entry, nine engineering programmes offer senior year places. They are namely, Biomedical Engineering, Computer Engineering, Computer Science, Electronic Engineering, Energy and Environmental Engineering, Financial Technology, Information Engineering, Mechanical and Automation Engineering, Systems Engineering and Engineering Management.

Admission through National Colleges and Universities Enrolment System

Mainland students, who are current Gao Kao candidates, are welcome to apply through the National Colleges and Universities Enrolment System. Applicants may refer to the website of Recruitment of Mainland Students for details.
(**http://admission.cuhk.edu.hk/mainland/requirements.html**).

Admission Scholarships

The Office of Admissions and Financial Aid, Colleges, Academic and Administrative Departments altogether offer plenty of scholarships each year. These scholarships provide not only recognition and encouragement to outstanding students, but also some financial support to needy students. The Faculty offers various entrance scholarships to newly admitted students with excellent entrance results in public exams. For the 2018 entry, about 150 students were awarded the Faculty Admission Scholarships

Award Criteria for Admission Scholarships

For JUPAS students

Scholarships by the Faculty Dean's Award (Remarks)		**Scholarships by the University** Information of 2018 entry is listed for reference. Scholarship information of 2019 entry will be announced through the Office of Admissions and Financial Aid. Website: **admission.cuhk.edu.hk**	
Achievements (Marks in any best 5 subjects)	**Scholarships by the Faculty**	**Achievements**	**Scholarships by the University**
35 marks	(i) Cash award of $56,000 (renewable); AND (ii) Faculty Exchange Scholarship: ($50,000)	Level 5** in 6 or more subjects	(i) Full Tuition (renewable); (ii) Annual Allowance of $20,000 (renewable); AND (iii) One-off Exchange Scholarship of $30,000
33-34 marks	(i) Half Tuition (renewable); AND (ii) Cash award of $30,000 (renewable); AND (iii) Faculty Exchange Scholarship: ($50,000)	Level 5** in 5 subjects	(i) Half Tuition (renewable); AND (ii) One-off Exchange Scholarship of $10,000
30-32 marks	(i) Half Tuition (one-off); AND (ii) Cash award of $30,000 (one-off); AND (iii) Faculty Exchange Scholarship: ($30,000)	Level 5** in 4 subjects	(i) Half Tuition (one-off) (ii) One-off Exchange Scholarship of $10,000
		Level 5** in 3 subjects	(i) Half Tuition (one-off) (ii) One-off Exchange Scholarship of $10,000
		Level 5** in 2 subjects	Scholarship: $5,000 (one-off)

Students eligible for scholarships have the opportunity to be awarded for both scholarships by the University and the Faculty. The exact amount is subject to the University regulations.

Encouragement Award (Remarks)	
Achievements	**Scholarships by the Faculty**
25 marks or above in any best 5 subjects AND a minimum of Level 4 in all subjects attempted	$1,000 for each subject attained Level 5 $5,000 for each subject attained Level 5* $10,000 for each subject attained Level 5**

STEM Scholarsip (Remarks)	
Achievements	**Scholarships by the Faculty**
25 marks or above in any best 5 subjects AND a minimum of Level 5 in at least 3 STEM electives	$1,000 for each subject attained Level 5 $5,000 for each subject attained Level 5* $10,000 for each subject attained Level 5**

Calculation of Marks

Conversion Table							
HKDSE Level	5**	5*	5	4	3	2	1
Mark	7	6	5	4	3	2	1

Remarks:

1. For STEM Scholarship, STEM electives refer to Physics, Chemistry, Biology, Combined Science, Information and Communication Technology, Design and Applied Technology, Mathematics Extended Module 1 or 2 and Integrated Science.
2. Dean's Award, Encouragement Award and STEM Scholarship are exclusive. Students who fulfill the award criteria of more than one scholarship scheme will be awarded to whichever with the highest scholarship amount. Scholarships will be awarded to students who attained the required results in a single sitting of the admitted year.
3. Mathematics Extended Module 1 or 2 is counted as one subject under the Admission Scholarships schemes.

For Non-JUPAS (Local) and International students

Admission Scholarships will be provided to non-JUPAS (local) and non-local applicants admitted with outstanding entrance grades in public examinations such as GCE-AL, IAL, IB diploma, etc.

For Sub-degree holders

$10,000 scholarship for students admitted to the Faculty with the qualification of "Distinction" from each institution.

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