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 26th 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: Shaping the future, Creating endless possibilities

Founded in 1991 by our former Vice-Chancellor Late Prof. Charles Kao, also known as the “Father of Fiber Optics” and Nobel Laureate in Physics, the Faculty of Engineering comprises world leading experts who are at the forefront of their disciplines and commit to teaching and research excellence.

The Faculty provides innovative education to our engineering students. Currently with more than 3,900 undergraduate and graduate students, we offer a wide spectrum of academic programmes in artificial intelligence: systems and technologies, biomedical engineering, computer engineering, computer science, electronic engineering, energy and environmental engineering, financial technology, information engineering, mathematics and information engineering, mechanical and automation engineering, and systems engineering and engineering management. To enrich students’ learning experiences, we provide a variety of ways to engage students in learning such as hands-on experiences, exposure to engineering entrepreneurship, field trips, international exchange, undergraduate summer research internship and placement.

The Faculty has been well recognized internationally for its excellence in engineering research. Our world-class laboratories and facilities enable excellent research to be carried out. We have been working closely with government and industry for developing new technologies to meet the societal needs and improve the quality of mankind. About 25 years ago, CUHK was the pioneer in Hong Kong’s internet infrastructure and development. The fact that over 80% of today’s internet traffic in Hong Kong still routes through CUHK’s communication equipment is a testimony and legacy of our pioneering and continuing contributions to Hong Kong. Today, Artificial Intelligence (AI) is poised to transform every aspect of our lives. The immense success of the startup SenseTime, the first Unicorn in HK, highlights our leadership position in the area of AI. On international rankings in Engineering, we are among the best in the world. Reuters named CUHK as the most innovative university in Hong Kong in the past 4 years.

The industrial revolution and the information age have changed the course of history. Engineers shoulder growing responsibilities for the betterment of mankind. We are now at the brink of the ‘Fourth Industrial Revolution’, fusing the physical, digital and biological worlds. The convergence of the Internet of Things, Artificial Intelligence, robotics, data science, biotechnology, materials engineering, microelectronics, autonomous vehicles, advanced manufacturing, and nanotechnology are poised to disrupt every industry and every aspect of modern life. CUHK Engineering must work together with other Faculties to play a key role in shaping the Fourth Industrial Revolution. In the years ahead, we will continue to strengthen our teaching and research excellence, as well as responding to the grand challenges facing the world.

In this brochure, you will find information about our Faculty’s figures, professors and students’ achievements, programmes and curriculum, students’ sharing etc. On top of that, you are more than welcome to talk to our students, teachers or visit the facilities when you have the chance.

Dean of Engineering

Prof. Martin D.F. Wong

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

Facts and Figures

Students (2018-19)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>2,621</td>
</tr>
<tr>
<td>Taught Postgraduate</td>
<td>586</td>
</tr>
<tr>
<td>Research Postgraduate</td>
<td>724</td>
</tr>
<tr>
<td>Research Doctoral</td>
<td>58</td>
</tr>
</tbody>
</table>

Staff

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic staff</td>
<td>117</td>
</tr>
</tbody>
</table>

Total: 3,989

65.7% Undergraduate
14.7% Taught Postgraduate
18.1% Research Postgraduate
1.5% Research Doctoral

Degree Programmes

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

Bachelor of Engineering

• Artistic Intelligence: Systems and Technologies
• 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*

Master of Science

• Artistic Intelligence: Systems and Technologies (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)
• Financial Technology (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

* The Engineering and Business Administration Double Degree Option is jointly offered by the Faculty of Engineering and Faculty of Business Administration. Please refer to PBABCI for programme details.
Excellence in Teaching and Research

Over a hundred of the Faculty professorial staff possesses extensive teaching and research experience. Not only do they educate youngsters with passion, but they also develop forefront technologies that benefit to society. The great range of research areas include mechanics, electronics, information processing, internet, digital entertainment, etc. Some of the research involves multi-disciplinary knowledge such as biomedical, energy, logistics and financial technologies. Our professors have published extensively 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 different international prizes and honours.

Father of Fibre Optics

The former Vice-Chancellor Late Prof. Charles Kao founded the 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.

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.

Eleven CUHK Engineering projects have received two Gold Medals with Congratulations of the Jury, one Gold Medal, seven Silver Medals and the Prize of the Ministry of Scientific Research and Innovation – Romania in the 47th International Exhibition of Inventions of Geneva.

Prof. Shih-Chi Chen’s team has been honoured with the globally prestigious 2018 R&D 100 Award for the development of the Digital Holography-based 3-D Nano-Builder. It can additively write micro-nano-scale components with complex structures in high speed and is especially suitable for applications in research and development such as printing photonic, robotic, metamaterials, micro-scaffolds, and drug delivery devices.

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. It is also recognised as the most innovative university in Hong Kong for the fourth consecutive year and is ranked 26th in the Asia-Pacific region by Reuters’ latest “Asia Pacific Region’s Most Innovative Universities” listing.
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.

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. 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. 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 events. 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.

Prof. Raymond Kai-Yu Tong’s team has developed a robotic leg for poliomyelitis. The robotic system can assist the Polio person to walk with better knee support and powered the swing phase movement. The system can adapt to the user walking speed automatically.

A research team led by Prof. Liming Bian has developed a method for preparing single chain nano material which improves the efficiency by a factor of 20 over that of conventional methods. His team further investigated the impact of the dynamic molecular conformational change in such material on cellular interactions in different biomedical applications at varying scales, paving way for the large scale production and translation of single chain nano materials in daily life.

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. 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.

A safe, high-rate and long-life oxygen battery that exploits a potassium biphenyl complex anode instead of the problematic potassium metal anode has been developed by Prof. Yi-Chun Lu and her research team. This technology provides a safe and efficient solution for the storage of renewable energy sources such as solar and wind.

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.

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 events. 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.

Prof. Raymond Kai-Yu Tong’s team has developed a robotic leg for poliomyelitis. The robotic system can assist the Polio person to walk with better knee support and powered the swing phase movement. The system can adapt to the user walking speed automatically.

A research team led by Prof. Liming Bian has developed a method for preparing single chain nano material which improves the efficiency by a factor of 20 over that of conventional methods. His team further investigated the impact of the dynamic molecular conformational change in such material on cellular interactions in different biomedical applications at varying scales, paving way for the large scale production and translation of single chain nano materials in daily life.

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. 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.

A safe, high-rate and long-life oxygen battery that exploits a potassium biphenyl complex anode instead of the problematic potassium metal anode has been developed by Prof. Yi-Chun Lu and her research team. This technology provides a safe and efficient solution for the storage of renewable energy sources such as solar and wind.
The Engineering student robotics team Phantom Dancer was crowned Champion in the Asia-Pacific Broadcasting Union Asia-Pacific Robot Contest (Robocon). CUHK is the first Hong Kong team to win this international trophy since the contest began in 2002.

The university received 18 awards in the “Challenge Cup” National Competition Hong Kong Regional Final – Hong Kong University Student Innovation and Entrepreneurship Competition 2018. The “Challenge Cup” National Competition Hong Kong Regional Final was organised by the Hong Kong New Generation Cultural Association, with 188 projects submitted by some 560 participants from 19 tertiary institutions.

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. The 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.

The programming team won a bronze medal at the 43rd Annual World Finals of the International Collegiate Programming Contest held in Porto, Portugal, defeating traditional prestigious teams from Stanford University, Harvard University, and Carnegie Mellon University.

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.

Mr. Gengjie Chen, a PhD student has taken First Place in the Association for Computing Machinery (ACM) Student Research Competition Grand Finals, with the research project themed “VLSI Routing: Seeing Nano Tree in Giga Forest”.

A genetic engineering team of 12 undergraduate students has been awarded a Gold medal at the international Genetically Engineered Machine (iGEM) 2018 Giant Jamboree held in Boston, USA, for developing a novel rapid test for influenza subtypes. This is the seventh time that a CUHK team won gold in the annual premier synthetic biology competition.

Two teams have won the Championship in the Bank of China (Hong Kong) FinTech Hackathon and received 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 student’s final-year project won the Gold Prize in the 2018 HKEIA Innovation & Technology Project Competition Award organized by the Hong Kong Electronic Industries Association. The project title is detection and screening of cantonese child speech sound disorder using automatic speech recognition techniques.
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 additional challenging courseworks and invaluable extra-curricular activities. The award of the ELITE Stream to qualified students will be officially recorded on academic transcript together with a certificate. 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’s 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 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 students to undertake research projects 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 overseas summer study programmes and internship opportunities.

Bai Ziqian
Computer Science graduate
Recipient of Professor Charles K. Kao Research Exchange Scholarship

It was my great honor to be able to participate in 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.

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.
GLOBEX Summer Programme@PKU

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

General Education

General Education plays a vital role in the University’s mission to provide a balanced undergraduate education for all 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.

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.

Placement and Internship Programme

To assist students in fostering their future career development, the Faculty has initiated the Placement and Internship Programme (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 real working environment and will take part in projects working together with experienced engineering professionals. The comprehensive and intensive training provide 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
- Chief Information Office, Office of the HKSAR Government
- ORKA 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 run in parallel.

A wide choices of 11 engineering programmes

<table>
<thead>
<tr>
<th>Broad-based admission</th>
<th>Programme-based admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Computer Engineering</td>
<td>• Artificial Intelligence: Systems and Technologies</td>
</tr>
<tr>
<td>• Computer Science</td>
<td>• Biomedical Engineering</td>
</tr>
<tr>
<td>• Information Engineering</td>
<td>• Electronic Engineering</td>
</tr>
<tr>
<td>• Mathematics and Information Engineering</td>
<td>• Energy and Environmental Engineering</td>
</tr>
<tr>
<td>• Mechanical and Automation Engineering</td>
<td>• Financial Technology</td>
</tr>
<tr>
<td>• Systems Engineering and Engineering Management</td>
<td></td>
</tr>
</tbody>
</table>

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 studies. Their preferences will be 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 2019-20, almost 80% of students were allocated to their top prioritized programme.


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:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Common Core</td>
<td>39 units</td>
</tr>
<tr>
<td>• English</td>
<td>9</td>
</tr>
<tr>
<td>• Chinese</td>
<td>6</td>
</tr>
<tr>
<td>• Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>• IT*</td>
<td>1</td>
</tr>
<tr>
<td>• General Education</td>
<td>21</td>
</tr>
<tr>
<td>Major Programme *</td>
<td>75 units</td>
</tr>
<tr>
<td>• Faculty Package</td>
<td>9</td>
</tr>
<tr>
<td>• Faculty Foundation Courses</td>
<td>Minimum 11</td>
</tr>
<tr>
<td>• Major Foundation, Required and Elective Courses</td>
<td>Up to 49</td>
</tr>
<tr>
<td>Free Electives</td>
<td>Remaining units</td>
</tr>
<tr>
<td>Total units for graduation:</td>
<td>At least 123 units (except MIEG Programme)</td>
</tr>
</tbody>
</table>

* 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

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Year 3</th>
<th>Year 2</th>
<th>Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capstone Project</td>
<td>Major Breadth Electives</td>
<td>Major Foundation Courses</td>
<td>Faculty Package</td>
</tr>
<tr>
<td>Major Electives</td>
<td>University Common Core (39 units: Languages, IT, Physical Education and General Education)</td>
<td>Faculty Foundation: Mathematics Courses Science Courses</td>
<td></td>
</tr>
<tr>
<td>University Common Core (39 units)</td>
<td>Free Electives</td>
<td>Other Learning Opportunities: Exchange, Summer Research Internship, Placement and Internship Programme, Competitions</td>
<td></td>
</tr>
<tr>
<td>Engineering Programme* (75 units)</td>
<td>University Common Core (39 units)</td>
<td>Remaining units</td>
<td></td>
</tr>
</tbody>
</table>

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

The Computer Engineering programme (CE) was formally established when the Faculty of Engineering was inaugurated in 1991. The CE programme is a balanced programme with an 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 advanced in VLSI and microprocessors, innovative products such as smartphones, 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.

"An optimist will tell you the glass is half-full; the pessimist, half-empty; and the engineer will tell you the glass is twice the size it needs to be"
“Computers themselves, and software yet to be developed, will revolutionize the way we learn.”

- Steve Jobs
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
15% of our graduates further studies overseas or
locally. Their destinations include top schools like
CMU, MIT, Stanford, Berkeley, Caltech, Cambridge,
and more.

Yang Zheyuan
2019 BEng (Information Engineering) graduate
PhD student in Information Engineering at CUHK

The well-structured curriculum offered by the Department of Information
Engineering has equipped me with a solid knowledge foundation. Thanks to
its breadth and depth, this curriculum covers a variety of streams which
can inspire students with different interests. Besides, our professors are
dedicated to teaching students with patience.

Other than lectures and labs, the Department of Information Engineering
also offers a summer research programme for undergraduate students to
develop their research skills. I have done two such summer research
internships, during both of which I have learned a lot thanks to the
professional instructions by the supervisors.

I have also got an opportunity to participate in
a one-term exchange programme at another
prestigious university – the University of
Illinois at Urbana-Champaign, USA – granted
by OAL and the Department of Information
Engineering through an IE award. This unique
exchange experience has given me more
confidence when facing challenges.
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.

Tang Sum Yee
2019 BSc [Mathematics and Information Engineering] graduate
Technology Analyst, J.P. Morgan

I have been interested in mathematics since my time as a high school student. MIE is a rigorous and comprehensive programme that has enabled me to explore both mathematics and its applications. The MATH courses have provided a thorough mathematical training that has significantly enhanced my problem-solving skills and my ability to think abstractly; while the IE courses have provided the relevant background for solving real-world problems. Studying in these two disciplines has given me a solid foundation that has enabled me to go for advanced studies.

During my years at CUHK, I have been able to broaden my horizon thanks to participating in an overseas exchange programme and thanks to various internships. In particular, participating in the exchange programme has allowed me to explore other disciplines such as financial mathematics. After my graduation, I have joined J.P. Morgan as a Technology Analyst and I have found the training acquired thanks to the MIE programme to be beneficial to my future career.
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.

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 programme 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 (Integrate 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 used 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 CUNH. In 2015, I went on an exchange programme in the Engineering Department at University College London to learn more engineering management skills. Furthermore, I joined the double-degree option majoring in Marketing, IBBBA 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.
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 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 programme 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 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 robotics, as well as intelligence multimedia processing for various Internet companies.

“Our intelligence is what makes us human, and AI is an extension of that quality.”
– Yann LeCun
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 the 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.

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.

Programme-based admission (JS4468) Artificial Intelligence Systems and Technologies

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.

Programme Features

- 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.

Technology and innovation is transforming our Health. Biomedical Engineers are enabling the transformation.
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
- Multimedia technology
- Semiconductor devices and nanotechnology
- Photonics and optoelectronics
- 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.
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 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. The knowledge and skills gained by students of the Programme will afford them strong career prospects. 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.

Employed in energy companies, consulting firms and green groups, renewable grid enterprises, building and construction industries, among other areas. They can cover 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 found all these trainings and practical experience did strengthen my technical skills, as to get the desirable job and continue to pursue my career in the engineering field.

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.

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.

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 found all these trainings and practical experience did strengthen my technical skills, as to get the desirable job and continue to pursue my career in the engineering field.

Graduate Trainee, CLP Power Hong Kong Limited

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.

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 found all these trainings and practical experience did strengthen my technical skills, as to get the desirable job and continue to pursue my career in the engineering field.

Graduate Trainee, CLP Power Hong Kong Limited

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.
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.

Programme Features

The mission of the FinTech programme is to educate and equip students with the 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 the 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. Recent internship placements include DBS, Haitong Securities, Hang Seng, HSBC, Hong Kong Monetary Authority and Zhong An Insurance.
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 (BMEG, CENG, CSCI, ELEG, EEN, 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 a Bachelor of Business Administration (IBBA) in Integrated Business Administration (IBBA) upon completion of both programme requirements.

Programme 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 Business Administration will be awarded a Minor in Integrated Business Administration in recognition of the credit units earned from the BBA courses if they have fulfilled the relevant academic requirements of the IBBA Minor programme.

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

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 Full-time Engineering Graduates 2018

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time Employment</td>
<td>78.4%</td>
</tr>
<tr>
<td>Temporary/Part-time Employment</td>
<td>1.1%</td>
</tr>
<tr>
<td>Further Studies</td>
<td>15.9%</td>
</tr>
<tr>
<td>Others</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

Sectors of Employing Organizations

- Commerce & Industry: 7.5%
- Education: 4.8%
- Government: 3.3%
- Social & Public Organizations: 3.3%

Career Fields

- IT: Data Communications & Network / Internet Engineering: 56.3%
- IT: eBusiness: 10.1%
- IT: Electronic Engineering: 5.6%
- IT: Engineering Consultancy: 5.1%
- IT: Financial & Quantitative Analysis / Engineering: 4.4%
- IT: Information Systems Administration & Management: 4.4%
- IT: Multimedia & Digital Entertainment: 4.1%
- IT: Software Design & Development: 2.4%
- IT: Telecommunications: 2.1%
- Mechanical Engineering: 0.9%
- Scientific / Research Work: 0.9%
- Sales / Marketing / Customer Service: 0.9%
- Others / Disciplined Service: 0.9%
- Administration / Management: 0.6%
- Banking / Finance / Business Consultant / Insurance / Wealth Management: 0.6%
- Logistics / Shipping: 0.6%
- Industrial Engineering & Product Design / Manufacture: 0.6%
- Accounting / Auditing: 0.6%
- Medical Devices & Instrumentation: 0.6%
- Purchasing / Trading / Retail Management: 0.6%
- Architecture / Surveying / Construction: 0.6%
- Medical & Health Services: 0.6%
- Property Management: 0.6%
- Hotel Management / Tourism / Catering Services: 0.3%
- Human Resources Management / Training: 0.3%
- Legal Services: 0.3%
- Statistical / Actuarial Work: 0.3%

Successful entrepreneur’s 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.

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

<table>
<thead>
<tr>
<th>Subject</th>
<th>Minimum Level</th>
<th>Subject Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Language</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>English Language</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Liberal Studies</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>One Science subject from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology / Chemistry / Combined Science / Physics / Mathematics Extended Module 1 or 2</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Preferred subjects: Biology / Chemistry / Combined Science / Physics / Information and Communication Technology / Design and Applied Technology / Mathematics Extended Module 1 or 2</td>
<td>3</td>
<td>Preferred subjects: 1.5 (1.75 for M1/M2, if applicable)</td>
</tr>
<tr>
<td>Any other subjects</td>
<td></td>
<td>Any other subjects: 1</td>
</tr>
</tbody>
</table>

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

2019 Admission Scores of HKDSE Examination (for reference only)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>CHIN</th>
<th>ENGL</th>
<th>MATH</th>
<th>LBST</th>
<th>SCI Elective</th>
<th>Elective 2 (applicable to M1/M2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Quartile</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

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

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 further information.

http://admission.cuhk.edu.hk/international

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, 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/sc/mainland
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 financial support to needy students. The Faculty offers various entrance scholarships to newly admitted students with excellent entrance results in public exams. For the 2019 entry, about 150 students were awarded the Faculty Admission Scholarships.

Award Criteria for Admission Scholarships

For JUPAS students

<table>
<thead>
<tr>
<th>Achievements (Marks in any best 5 subjects)</th>
<th>Scholarships by the Faculty</th>
<th>Achievements</th>
<th>Scholarships by the University</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 marks</td>
<td>Cash award of $56,000 (renewable)</td>
<td>Level 5** in 6 or more subjects</td>
<td>(i) Full Tuition (renewable); (ii) Annual Allowance of $20,000 (renewable); AND (iii) One-off Exchange Scholarship of $30,000</td>
</tr>
<tr>
<td>33-34 marks</td>
<td>Half Tuition (renewable), AND Cash award of $30,000 (renewable)</td>
<td>Level 5** in 5 subjects</td>
<td>(i) Half Tuition (renewable); AND (ii) One-off Exchange Scholarship of $10,000</td>
</tr>
<tr>
<td>30-32 marks</td>
<td>Half Tuition (one-off), AND Cash award of $30,000 (one-off)</td>
<td>Level 5** in 4 subjects</td>
<td>(i) Half Tuition (one-off) (ii) One-off Exchange Scholarship of $10,000</td>
</tr>
<tr>
<td></td>
<td>Level 5** in 3 subjects</td>
<td>Scholarship: $10,000 (one-off) (ii) One-off Exchange Scholarship of $10,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Level 5** in 2 subjects</td>
<td>Scholarship: $5,000 (one-off)</td>
<td></td>
</tr>
</tbody>
</table>

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.

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” of their Associate Degree or Higher Diploma from institutions in Hong Kong.

Remarks:
Mathematics Extended Module 1 or 2 is counted as one subject under the Admission Scholarships.

Calculation of Marks

<table>
<thead>
<tr>
<th>HKDSE Level</th>
<th>5**</th>
<th>5*</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Conversion Table

Remarks:
Mathematics Extended Module 1 or 2 is counted as one subject under the Admission Scholarships.