

# ENGAGE 程繫中大

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## DIRECT ADMISSION SCHEME AND NEW PROGRAMME

The Faculty of Engineering offers a wide choices of undergraduate engineering programmes. In this issue, we feature some of our programmes with development: Biomedical Engineering, Electronic Engineering, Energy and Environmental Engineering, and Financial Engineering.



EE

Electronic Engineering



Department of  
Biomedical Engineering  
The Chinese University of Hong Kong

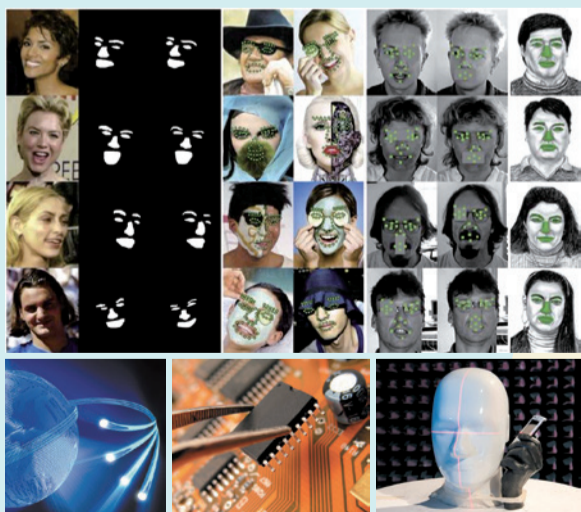
BME

Biomedical Engineering

The Department of Electronic Engineering (EE) was established in 1970 by Prof. Charles KAO, former Vice-Chancellor of the Chinese University of Hong Kong and a 2009 Nobel Laureate who pioneered the use of optical fibres in communications. The Bachelor of Engineering (Honours) in Electronic Engineering Programme 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 to provide balanced training in both hardware and software skills. The EE Department was ranked No. 1 (number 1) in Hong Kong by QS World University Rankings by Subject 2016 and by Shanghai Ranking's Global Ranking of Academic Subjects 2017.

Starting in 2018, the EE programme will directly admit its students through (1) Joint University Programme Admission System (JUPAS code: JS4434) and (2) other admission channels (for applicants with other academic qualifications such as Associate Degree/Higher Diploma, IB, GCE, etc.) We look for applicants with innovation minds who are passionate about engineering, full of curiosity and have sufficient training in mathematics and science such as physics and chemistry. EE graduates pursue successful careers in a wide range of hi-tech industrial and business sectors including telecommunications, information technology, e-commerce, technology services, industrial manufacturing, and product design and development. Some of the graduates also choose to pursue postgraduate studies at local or overseas institutions.

For more details, please visit the programme website at [www.ee.cuhk.edu.hk](http://www.ee.cuhk.edu.hk).



After more than a decade of incubation, development and strategic planning, CUHK has judged that the time is now right to establish the Department of Biomedical Engineering (BME) on 1 July 2017 in the Faculty of Engineering in close collaboration with Faculty of Medicine. The new Department will host all undergraduate and postgraduate programmes in the BME to champion their further coherent development and to scale new heights in this important area of education, research and professional services.



(From left) Prof. Aaron Ho, Prof. Jonathan Choi, Prof. Arthur Mak, Prof. C. P. Wong, Prof. Raymond Tong, Prof. Bian Liming and Prof. Megan Ho

Prof. Raymond TONG, Chairman of the new Department, stressed that for BME to exert the significant impacts from bench to bedside, deep collaboration between engineers and clinicians is absolutely essential. He very much appreciates the collegial environment at CUHK and is confident the BME activities will continue to thrive not only in the engineering laboratories on the main campus, but also in those on our medical campus as well.

The core Faculty members of the new BME Department would like to thank all their colleagues, particularly those in EE and MAE, for their supports all these years in the development of the Biomedical Engineering programmes. They look forward to fruitful partnerships with all their sister departments to establish BME as one of the top educational and research programmes in CUHK.

Students in the BEng Programme in BME are provided with solid underpinnings in science and mathematics, along with a strong engineering foundation in biomechanics, biomaterials, and biomedical circuits and signals. Students may choose to concentrate upon one of three streams, namely (a) medical instrumentation and biosensors, (b) biomedical imaging and informatics, and (c) biomolecular, cell and tissue engineering. Depending on their respective interests, students will have ample opportunity to apply advanced engineering technology to areas such as surgical and rehabilitation robotics, wearable biosensors, lab-on-a-chip, organ-on-a-chip, image-based computer-assisted diagnostics, nanomedicine, and regenerative medicine.

Many BME students opt for industrial internships and research internships, both local and overseas, as well as many other types of co-curricular and extra-curricular experiential learning. For example, in recent years BME students have been hosted as summer interns at the University of California at Irvine, Columbia University in New York City, Imperial College in London, the Korea Institute of Science & Technology in Seoul, Northwestern University in Chicago, the University of Pittsburgh, the National University of Singapore, Nanyang Technological University, and the University of Toronto. BME students have also participated and won many awards in regional and international competitions such as iGEM, EMedIC Global, Challenge Cup and others.

Starting in 2018, the BEng programme in Biomedical Engineering will admit its students directly from among applicants with HKDSE (JUPAS code: JS4460) or other recognized academic qualifications such as Mainland-JEE, IB, GCE-AL, and International-AL. This direct programme admission will allow BME to recruit students with a broader underpinning in science and mathematics. For HKDSE, higher weighting will be assigned to science subjects such as biology, chemistry, physics, and combined science, as well as to mathematics or its extended modules.

For more details, please visit [www.bme.cuhk.edu.hk](http://www.bme.cuhk.edu.hk)

Explore, Innovate and Care



# EEEN

## Energy and Environmental Engineering

Energy and Environmental Engineering Programme (EEEN) educates and equips students with fundamental knowledge and practical experience in an integrated study of the energy and environmental engineering field covering the related areas of energy generation, storage and distribution, environmental monitoring, assessment and design, as well as building services and management. The Programme is aimed at preparing our graduates to embark on a broad base of successful careers as practitioners, academics, entrepreneurs, and leaders in the fields of energy, environmental science, building service engineering and beyond.

EEEN has been designed with a strong interdisciplinary nature spanning the relevant topics of engineering, environmental and architectural studies. The EEEN curriculum incorporates significant elements from the disciplines of Environmental Science (ENSC), Geography and Resource Management (GRMD), and Architecture (ARCH) areas. Through the Programme, students will acquire fundamental knowledge of the principles of the relevant subjects, as well as the ability to facilitate solutions to problems pertaining to energy technologies, environmental engineering, urban pollutions, building performance assessment and control, etc., thereby contributing to the well-being of our society.

### Admission Schemes

We welcome any applicant satisfying the following basic academic requirements to apply.

**JUPAS Admission:** Secondary school students taking the Hong Kong Diploma of Secondary School Examination (HKDSE) should apply for admission through the Joint University Programme Admission System (JUPAS).

**Other Admission Channels:** Local applicants with other qualifications (Associate Degree/Higher Diploma, HKALE, GCE, IB, SAT/AP, etc.) can apply through the non-JUPAS admission scheme. Non-local students who require a student visa to study in Hong Kong can apply through the International Students Admission Scheme. A non-JUPAS or international applicant may apply for "Admission with Advanced Standing" if he/she meets the specific requirements for specific qualifications. Applicants holding the qualification of associate degree or a higher diploma with excellent results may apply for direct admission to senior year places. Mainland students who are current Gao Kao candidates must apply through the National Colleges and Universities Enrolment System.

### Programme Highlight

The EEEN Programme has three streams, i.e., Sustainable Energy Technology, Environmental Engineering, and Green Building Technology. Green Building Technology, a newly added stream, provides students with fundamental knowledge on environmental performance assessment and energy management of urban buildings.

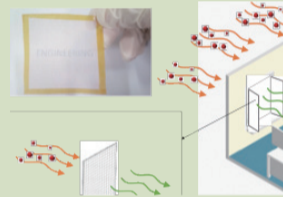
For more details, please go to [www.eeen.cuhk.edu.hk](http://www.eeen.cuhk.edu.hk)



EEEN Faculty members (from left to right): Prof. Ren WEI, Prof. CHEN Yongsheng, Prof. YAM Yeung (Programme Director), Prof. LU Yi-Chun, Prof. XU Dongyan, Prof. CHEN Chun.

### Building Energy and Environment Laboratory (Prof. C. Chen)

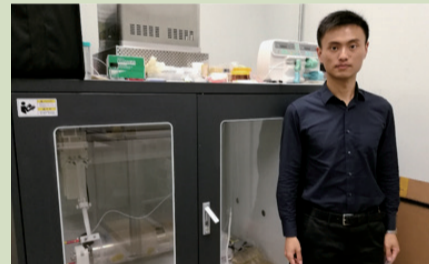
#### Indoor PM<sub>2.5</sub> Pollution Control



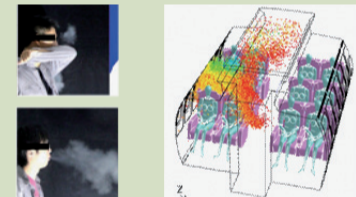
#### Building Automation and Control



[http://eyesabovesecurity.com/?page\\_id=18](http://eyesabovesecurity.com/?page_id=18)



#### Infectious Particle Transport Control



# FINTECH

Financial Technology



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.

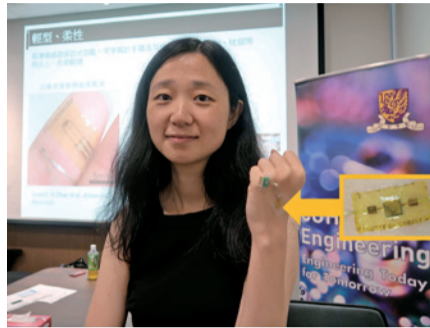
The mission of the FinTech programme is to educate and equip students with the essential knowledge and capabilities to apply technological innovations to financial services, and to nurture leadership and entrepreneurship for the next generation of financial talents in support of Hong Kong's endeavor 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 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.

## CUHK Research Team Develops Ultra-Thin Wearable Blood Pressure Sensor



The research team led by Associate Professor-Prof. ZHAO Ni and Adjunct Professor-Prof. ZHANG Yuan Ting of the Department of Electronic Engineering has developed an ultra-thin wearable blood pressure sensor that can be worn as a wristband or weaved into clothing in order to prevent acute health events. Prof. Zhao believes that in the future, such a sensor should come with artificial intelligence, so that it can learn and improve on itself, with the human body as its teacher, constantly showing it how the body functions and works.

## Prof. CHING Pak Chung Awarded the Silver Bauhinia Star by the HKSAR

Congratulations to Prof. CHING Pak Chung of the Department of Electronic Engineering for being awarded the Silver Bauhinia Star (SBS) by the Government of the Hong Kong Special Administrative Region for his long and distinguished public and community service, particularly in his capacity as Chairman of the Veterinary Surgeons Board of Hong Kong. Prof. CHING has made exemplary efforts in the legislative amendment exercise of the Veterinary Surgeons Registration Ordinance (Cap. 529) and immense contributions to the furtherance of the mission of the Veterinary Surgeons Board in safeguarding the health and welfare of animals and the interests of animal owners.



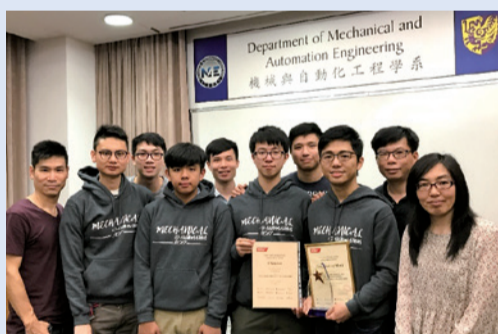
## IE PhD Students Receive Awards Under the CUHK Global Scholarship Programme for Research Excellence 2017-18



IE PhD students Miss TANG Ming (supervised by Prof. HUANG Jianwei) and Mr. YI Hanling (supervised by Prof. CHEN Minghua) have received funding support to undertake research at leading universities in 2017-18. Miss TANG will pay her research visit to Stanford University for six months while Mr. YI will be at California Institute of Technology for three months from September 2017.

## MAE Students Win the Champion at the 6<sup>th</sup> Greater China Design Competition 2017

Eight students: YIP Kwan Yi (3<sup>rd</sup> right), YIP Ka Chun (5<sup>th</sup> right), YIP Chi Yiu (5<sup>th</sup> left), CHIU Sin Hang (2<sup>nd</sup> left), HO Wing Hang (4<sup>th</sup> left), LEUNG Chun Hei (3<sup>rd</sup> left) and CHOW Ka Chung (4<sup>th</sup> right), led by Dr. LI Yiyang (2<sup>nd</sup> right), Prof. XU Dongyan (1<sup>st</sup> right) and the assessor LEUNG Yun Yee (1<sup>st</sup> left), from the Department of Mechanical and Automation Engineering, CUHK designed a prototype for energy conversion, and won the Champion at the 6<sup>th</sup> Greater China Design Competition.



The Champion: CUHK team

## Engineering Team Develops a Small, Portable, Low-Cost Gas Sensing System



A team led by Prof. REN Wei, Assistant Professor of the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong (CUHK) has developed a portable gas sensing system with high sensitivity. The use of quartz-enhanced photoacoustic spectroscopy (QEPAS), significantly lowers operational costs. 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.

## Two Engineering Professors Elected Canadian Academy of Engineering Fellows

Prof. DU Ruxu and Prof. MENG Qing Hu Max of the Faculty of Engineering have been elected Fellows of the Canadian Academy of Engineering (CAE) for their notable achievements in Engineering. This year, a total of 52 new international fellows were inducted, and Professor Du and Professor Meng were the only fellows from Hong Kong.

An expert in manufacturing engineering and precision engineering, Prof. DU has devoted himself to promoting mechanical manufacturing technology over the years. His inventions have advanced the development of key technologies in this field, especially in metal forming and precision engineering, and established two mid-size companies, leading directly to the global growth of the machinery industry.

Prof. MENG is an international leader in robotics, well known for developing novel medical robots for advancing biomedical engineering. He has made impressive contributions to the Canadian industrial and military sectors through successful collaborative projects and the training of highly qualified engineers.

The Canadian Academy of Engineering is the national institution through which Canada's most distinguished and experienced engineers provide strategic advice on matters of critical importance to Canada.



Prof. Du Ruxu (right)

Prof. Meng Qing Hu (right)

## CUHK Won Championship in the PwC's Inter-University Capture The Flag Competition

In the PricewaterhouseCooper's hacking competition held on 23 June 2017, two teams from CUHK competed against other undergraduates in Hong Kong, and the team 'Wannacry' clinched the championship after 6 hours of non-stopped hacking to tackle 15 different challenges ranging from Crypto, Web, Binary reverse-engineering as well as Networking hacks. The winning team would be offered up to 1 year internship with PwC Hong Kong and China's Cybersecurity and Privacy team plus full sponsorship of Offensive Security Certified Professional (OSCP) certification.

Organized by the PwC, the competition aimed at raising cybersecurity awareness among Hong Kong's youth and attracted a total of 9 teams from local universities.

List of winners:

(from left) TONG Cham Fei, LEUNG Shing Yuet, ZENG Yihui, WANG Xianbo, HUNG Wai Man, LAM Tsz Ching, YIK Wai Pan



## BME Students Won the HKSTPC Technopreneur Golden Award

Two BME students, AU Chun Ki Franklin (Year 2, second from the right) and LAM Wai Yin Kelvin (Year 3, first from the left), together with their partners won the HKSTPC Technopreneur Golden Award. Their team developed an innovative post-stroke rehabilitation product named "Give Me Five" to help stroke survivors to regain the ability to move and use their hands.



The Dare to Change Competition (YDC) is an annual event organized by Young Entrepreneurs Development Council. Aiming to nurture and support young entrepreneurs, the competition is open to all undergraduate and postgraduate students in Hong Kong.

# Professor Charles K. Kao Student Creativity Awards 2017 - Prize Presentation Ceremony

'Professor Charles K. Kao Student Creativity Awards 2017' (PCKKSCA) Prize Presentation Ceremony was held successfully on 11 May 2017 at Wu Yee Sun College. It was officiated by Professor Joseph J.Y. SUNG, Vice-Chancellor who presented the awards. Prof. Fanny M.C. CHEUNG, Pro-Vice-Chancellor gave the opening speech of the ceremony. PCKKSCA is a biennial campus-wide competition of technological innovation; organized by Centre for Innovation and Technology. It aims to foster the three-pronged-creation among students: Innovativeness, Creativity and Entrepreneurship. Prof. Kwong-sak LEUNG, Chairman of PCKKSCA 2017 Judging Panel commented on students' performance, 'It has been a very keen competition this year; the scores of different teams were close indeed. Therefore, co-champion, co-first runner-up etc. have come up.' Professor SUNG and Professor CHEUNG further encouraged the awardees to develop the three-pronged-creation thoroughly, and strive to develop their innovative works into startup business, to launch products into the market, and contribute to the society.



'Professor Charles K. Kao Student Creativity Awards 2017' (PCKKSCA) Prize Presentation Ceremony was held on 11 May 2017 successfully.

Winners list:

Award	Winner	Supervisor
<b>Undergraduate Individual</b>		
Champion	CHENG Hiu Yee (Biomedical Engineering)	Prof. LAU Tat Ming Darwin
First Runner-up	CHENG Hung Hon (Mechanical & Automation Engineering), YIP Hang Man (Biomedical Engineering)	Prof. LAU Tat Ming Darwin
Second Runner-up	CHAN Ka Ian (Biomedical Engineering)	Prof. LIAO Wei Hsin
<b>Undergraduate Group</b>		
Champion	PAN Tianle, ZHUANG Zhuoli, MA Zhiyao (Biomedical Engineering)	Prof. LI Zheng
Champion	CHAN Ngo Foon, LEE Ka Fai, CHAN Ngo Ming (Mechanical & Automation Engineering)	Prof. GUO Ping
Second Runner-up	CHAN Yuen Shan, MA Fei Yeung Matthew, MOK Ching Wah (Mechanical & Automation Engineering)	Prof. LAU Tat Ming Darwin
Second Runner-up	TING Sin Hang, POON Mong Wah, YIP Kin Chiu, LEUNG Wai Man (Mechanical & Automation Engineering)	Prof. LAU Tat Ming Darwin
<b>Postgraduate Individual</b>		
Champion	GAO Fei (Mechanical & Automation Engineering)	Prof. LIAO Wei Hsin
First Runner-up	WANG Ji (Mechanical & Automation Engineering)	Prof. CHEN Shih Chi
First Runner-up	CHENG Truman (Surgery), LI Pui Ling (Biomedical Engineering)	Prof. LI Zheng
Second Runner-up	FENG Qian (Biomedical Engineering)	Prof. BIAN Liming
Merit	LEE Hiu Hung, WANG Dongping (Mechanical & Automation Engineering)	Prof. CHEN Shih Chi, Prof. ZHAO Ni, Dr. CHEN Jianwei, Ms. CHEN Mengyu
Merit	DANG Xiaobing (Mechanical & Automation Engineering)	Prof. DU Ruxu
<b>Postgraduate Group</b>		
Champion	WANG Dien, WEN Chenyang, CHANG Yina, LEE Hiu Hung (Mechanical & Automation Engineering)	Prof. CHEN Shih Chi



PCKKSCA was officiated by Professor Joseph J.Y. SUNG, Vice-Chancellor who presented the awards and encouraged the awardees.

# INNOVATION AND TECHNOLOGY STUDENT CLUB



With a view toward Hong Kong for upcoming challenges and developing a knowledge-based economy, the Faculty of Engineering of the Chinese University of Hong Kong (CUHK) proposes to establish an "Innovation and Technology Student Club" (ITSC) jointly with the Innovation and Technology Commission (ITC). Our vision is to nurture young talents to become future technological elites who will contribute to the development of Hong Kong. Since May of 2009, we have recruited around 1,850 secondary students with similar interests in science and engineering.

On 15 July 2017 Saturday morning, more than 20 members visited Hong Kong Aero Engine Services Limited (HAESL) in Tseung Kwan O Industrial Estate next to TVB. Their senior Engineers, Billy and Gary, gave us a briefing regarding flight engine of repair and overhaul services. Our students acquired significant physics and engineering knowledge about the way in which a flight engine works. Moreover, our students were introduced to details of career paths in the company.

From 19 to 20 July 2017, students spent 3 days and 2 nights staying in New Asia Hostel, where the Green X Engineering X Energy summer camp was held with the full support and sponsorship of Mitsubishi Electric (Hong Kong) Ltd. With the incentive of enriching the participants' engineering knowledge and experience of University life, activities included talks about energy, green hunts on campus, technology and R&D lab. Visits and detective games designed by University students together with the ITSC committee, and energy workshops and the like were all organized in the camp.



Visit HAESL



In summer camp during a visit to Mitsubishi Electric (Hong Kong) Limited, we took a picture with Chairman and Managing Director Mr. Jun Hasegawa.



In summer camp, participants presented information on renewable energy.



In summer camp, a visit was paid to the showroom of Mitsubishi Electric (Hong Kong) Limited's "easy to clean" air conditioner.



In summer camp, a visit was made to the Energy Lab for a briefing on the theory of the Fuel Cell System.



Technology visit of EMSD on 24 July, 2017



During the summer holiday, ITSC also planned a series of science and engineering activities, including:

- Research Mentorships, e.g. DIY 3D printer and robot related topics
- Workshops, e.g. DNA Fingerprint
- Visits, e.g. Civil Aviation Department, EMSD, ZeroCarbon, Kone Elevator, Time Medical Systems (for MRI R&D), Jetta Company (a big toy manufacturer in China) etc.

More and more winter activities such as a winter camp and the Easter exchange camp next year will surely surprise you!

Still waiting?? Take action now to apply for ITSC membership and also "Like" us in facebook to receive ITSC first-hand ITSC news.

ITSC is planning various activities such as technology reporter and research internships, technology ambassadorships, summer camp, and workshops for this coming March and summer. You may look up more of our activities on our website, Facebook and YouTube channel as indicated below: [www.itsc.org.hk](http://www.itsc.org.hk), <https://www.facebook.com/ITSC.HK> and [www.youtube.com/CUHKcintec](http://www.youtube.com/CUHKcintec).

If you are a secondary student, you are welcome to join our activities by applying to become a member through <http://www.itsc.org.hk/chi/membership.html> online. By joining our membership programme, most activities will all be made available to you free of charge!

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