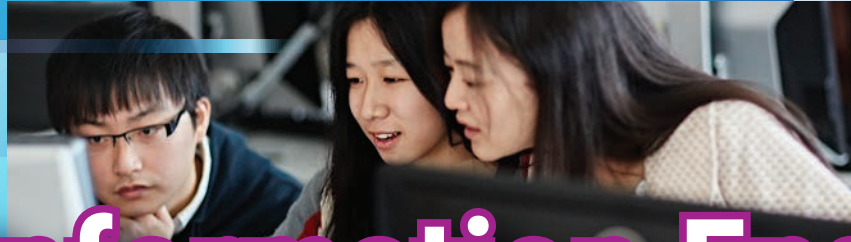




香港中文大學
The Chinese University of Hong Kong



信息工程

Information Engineering

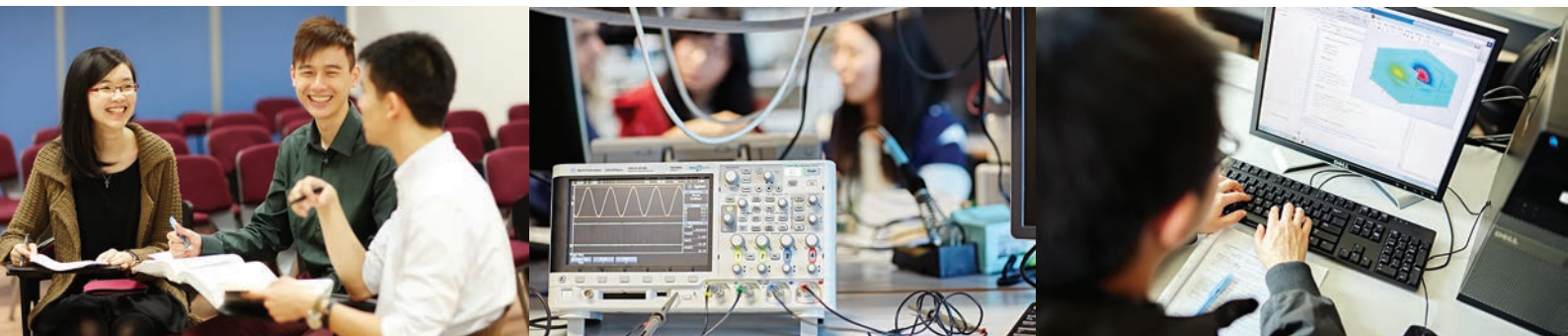


Discover IE,
Discover Your Future!

$$\begin{aligned}
 & \lambda = \frac{h}{m v} \quad m = N \cdot m_0 = \frac{M}{N_A} \quad E = \frac{1}{2} m v^2 \\
 & \lambda = \frac{h}{\frac{M}{N_A} v} = \frac{h N_A}{M v} \quad l_t = l_0 (1 + d \Delta t) \quad I = \frac{U_e}{R + R_0} \\
 & f_0 = \frac{1}{2\pi} \sqrt{\frac{g}{l}} \quad \psi(x) = \sqrt{\frac{2}{L}} \sin \frac{n\pi x}{L} \quad E = m c^2 \\
 & \oint \vec{B} \cdot d\vec{l} = \mu_0 \iint \vec{J} \cdot d\vec{S} \quad \vec{E} = \frac{1}{2} \hbar \sqrt{k/m} \quad \beta = \frac{v}{c}
 \end{aligned}$$

INFORMATION ENGINEERING

Principles, Technologies, Networks, and Applications



Information

Data, Voice, Image,
Video, Multimedia

- Transmission
- Networking
- Processing

Engineering

- Understand the principles (fundamental)
- Solve problems (scientific and systematic)
- Create new technologies (innovative)

To train engineering leaders who can **manage** and **create** new **information technologies** for all disciplines.

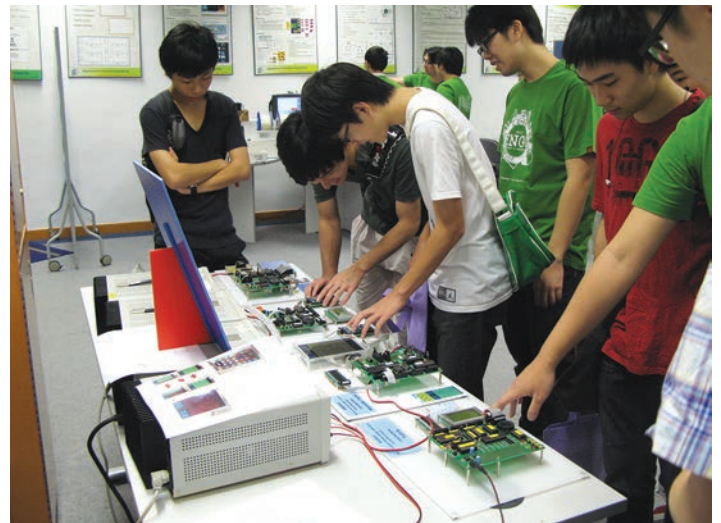
PROGRAMME

Programme Features

The mission of the Information Engineering Department is to nurture and educate engineering leaders of the Information World of today and tomorrow. We offer an all-round engineering education that focuses on:

- * Sound engineering knowledge and creativity;
- * Solid experience with innovative technologies;
- * Good soft skills (communication, interpersonal, and business);
- * Broad vision and exposure.

The Information Engineering Programme is accredited by the Hong Kong Institute of Engineers (HKIE).



Streams of Specialization

Students may choose to develop their engineering specialities in one or more of the following streams:

* Big Data -	Web-scale Information Analytics, Programming Big Data Systems, Internet of Things, Social Media and Human Information Interaction, Cloud Computing, Machine Learning,
* Internet Engineering -	Advanced Networking Protocols and Systems, Network Economics, Network Software Design and Programming, Mobile/Web Applications, Mobile Networking, Building Scalable Internet Services,
* Cyber Security -	Intro to Cyber Security, Applied Cryptography, Web Security & Programming, Secure Software Engineering, Digital Forensics, Security and Privacy in Cyber Systems,
* Communications -	Digital Communications, Signal Processing, Optical Communications, Wireless Communications, Telecommunication Switching and Network Systems, Lightwave System Technologies,
* Enrichment -	Multimedia Coding and Processing, Stochastic Processes, Channel Coding and Modulation, Simulation and Statistical Analysis, Information Theory, Network Coding, Design & Analysis of Algorithms, ...

Internship, Work Study, Overseas Exchange

Students can acquire work experience by taking short-term or 7-15 month long paid internship in reputable companies in Hong Kong, or gain international exposure by going for a short term or year long overseas exchange. We offer overseas exchange scholarships to students with good academic results.

Pre-final year students can also participate in a Work Study Program on a voluntary basis. Each participant is required to spend about a year in a selected local company as a full-time employee and continue his/her final year of study after the internship.

Participating companies include HSBC, PCCW, SmartTone Telecommunications Ltd., MTR Corporation Ltd., CLP Power Hong Kong Ltd. and CLP Holdings Ltd., Hewlett-Packard (HP), Fujitsu PC Asia, IBM China/Hong Kong Ltd., Lenovo Group Ltd., Morgan Stanley, JP Morgan Chase, Thomson Reuters, The Hong Kong Jockey Club, Octopus Cards Ltd., Hong Kong Monetary Authority, and Office of the Government Chief Information Officer, etc.

Further Studies

The Information Engineering Department undertakes world-leading research and offers top quality Ph.D., M.Phil., M.Sc., and B.Eng programmes. Our graduates have been awarded full scholarships to enter Ph.D. programmes of top universities all over the world (e.g., MIT, UC Berkeley, Stanford, Caltech, UCLA, CMU, UIUC, Oxford and Cambridge, etc.)

Double-Degree Options

In collaboration with the Faculty of Business Administration, the Information Engineering Department is also offering the Double-Degree Programme in Information Engineering and Business Administration. Please refer to <http://www.erg.cuhk.edu.hk/erg/ergbba> for detailed information about the double-degree option.

Our Professors



Our Professors are dedicated educators and world-class researchers who obtained their Ph.D. degrees from top universities like MIT, Berkeley, Harvard, Columbia, Stanford, as well as CUHK. Many of them have extensive industrial experience with leading institutions world-wide before joining the department. They are authors of seminal and award-winning publications, holding key patents for innovations in various fields. They maintain strong ties with the local industries and actively contribute to the international research communities. Most importantly, our professors love to interact with students and inspire them to become top-notch researchers, engineers, and leaders.

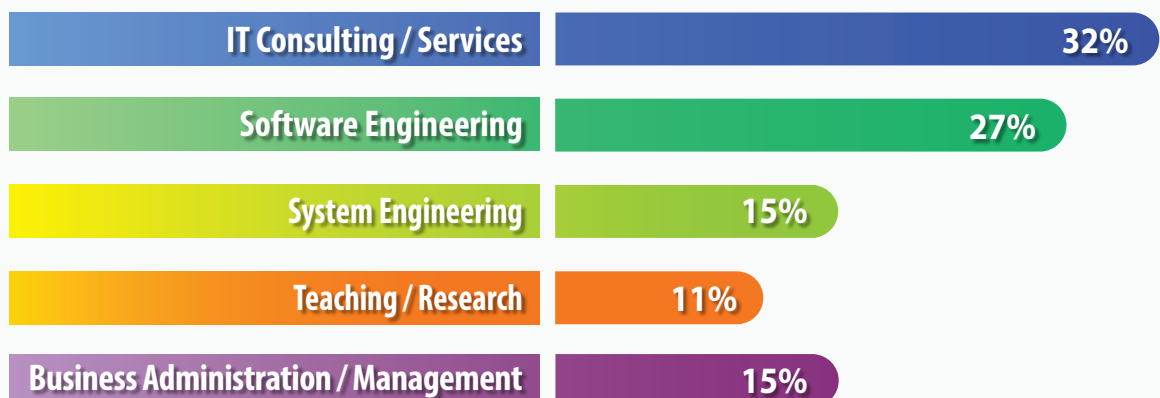


Employment Statistics

With solid IT knowledge, strong problem solving skills, and good communication abilities, our graduates have very promising careers. We have about 100 graduates every year that go for a diversified set of careers. Most of them start as engineering professionals, while others go to business or other disciplines. More than 10% of our fresh graduates continue for full-time studies.

2016 IE Graduate Employment Survey in April, 2017

Job Nature



Graduate Sharing



WONG Wai Nga Krista

2017 IERG Graduate ; Currently an Assistant Project Manager at Apptech



The years studying in CUHK for me are well-rounded. I have met a lot of friends coming from many places around the world. The professors here are enthusiastic in teaching, they are patient while guiding us to think. Most importantly, the variety of courses offered in the Information Engineering programme are very well-structured. I had studied courses in algorithms, object-oriented programming, and web security. The course "Web Programming and Security" is the one I like most. The content is very comprehensive, covering different aspects of web security including frontend, backend, and physical. The assignment was about building our own e-commerce website and securing it. This experience is so important to my current employment, as it has helped me to understand some real-world problems, and I am really able to put the knowledge learnt into use. In my FYP, I had the opportunities to contribute my knowledge to implement an app to help people with communication disorder to improve their social participation. CUHK IE for me is an altogether monumental experience. I am sure all these valuable experiences will contribute to my personal growth and future career development.

SONG Jianhan

2017 IERG Graduate ; Currently a PhD student at University of Texas at Austin



I would strongly recommend students showing interests in Mathematics and technology to consider taking CUHK's Information Engineering Programme, which I have enjoyed an amazing journey that I might have little chance to experience in my home country. Here, I have improved my academic ability and technical skills through content-rich courses of a wide range of topics, from very theoretical signal analysis to application-oriented software development. No matter you aspire to continue an academic career or to fulfil yourself in the industry after graduation, you will find a proper path of study to empower yourself in IE. Here we have a team of outstanding and talented professors who have gained their fame in corresponding fields. They are always willing to provide assistance, which will give a strong boost for your study and future career.

Furthermore, IE department encourages students to widen the horizons and provides plenty of opportunities more than textbook studies. In my junior year, I was honored to participant in an exchange program to UIUC, America, where I had a precious experience to work with researchers in this top-5 university worldwide in information science. After that, I had another chance to work as a full-time developer in a local company in work study program. Now, upon the rich experiences, I am confident to embrace the future after graduation.



WANG Jingyu

2017 IERG Graduate ; Currently a student of Msc Computational Data Science programme at Carnegie Mellon University



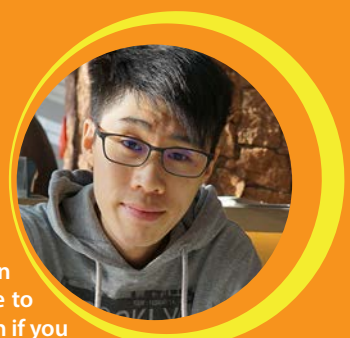
Undergraduate study at IE department has laid the solid foundation for my further career development. At IE, students can choose from a broad range of courses to tailor his/her learning experience. I was opened to courses from multimedia coding and processing, big data analytics to cybersecurity, which gave me a taste of how things work in different aspects of technology. Thus I got the chance to figure out what I truly love by learning in a diverse range of topics. While some of the courses focus more on theory, there are a number of courses that offer real-world development experience such as building a web service from scratch. And such experience turned out to be really helpful for career development.

Apart from in-class study, I also participated in the undergraduate summer research program, which brought me the opportunities to try solving research problem leveraging what I have learned from courses. The professors are all very supportive throughout my learning experience. They are open-minded and gave me plenty of advice for course planning, graduate school application, and life-long career development. The most valuable thing I gained in IE apart from solid knowledge would be precious friendship from my fellow classmates. The IE computing lab has provided us with great space and facilities to communicate and collaborate with friends and seniors. I learned a lot from everyone I met here. Together we did great projects to enhance mutual-learning. My years in IE was filled up with unforgettable memories and growth. And I hope that start from here I can establish a career path to become engineers that can generate impact in the industry and realize my own value to the society.

CHUNG Shing Hin

2017 MIEG Graduate ; Currently a student of MSc Computational Mathematical Finance programme at University of Edinburgh

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



CURRICULUM

Major Requirement including Faculty Package (75 units)		Wide Range of Elective Courses	
Year 4	Final Year Project I and Final Year Project II <i>plus major electives</i> SPECIALIZED	Big Data	Web-scale Information Analytics Programming Big Data Systems · Internet of Things Social Media & Human Info Interaction Image & Video Processing Machine Learning · Cloud Computing
Year 3	Microcontrollers and Embedded Systems, Computer Networks Information & Software Engineering Practice, Principles of Communications Systems, Communications Lab Info Infrastructure Design Lab <i>plus major electives</i> PROFESSIONAL		Internet Engineering
Year 2	Data Structures, Signals & Systems, Engineering Practicum Basic Analog & Digital Circuits, Probability for Engineers Complex Analysis and Differential Equations for Engineers Introduction to Systems Programming Electronic Circuit Design Laboratory <i>plus major electives</i> ADVANCED	Cyber Security	Intro to Cyber Security · Applied Cryptography Web Security & Programming · Digital Forensics Secure Software Engineering Security & Privacy in Cyber Systems
Year 1	Faculty Package: Intro to Engineering Design Problem Solving by Programming	Enrichment	Digital Communications · Signal Processing Optical Communications · Wireless Communications Telecommunication Switching & Network Systems Lightwave System Technologies
	+ Engineering Physics Calculus for Engineers Linear Algebra & Vector Calculus FUNDAMENTAL		

Plus University Core Requirement, including English Language, Chinese Language, General Education, Physical Education & IT Training.

CAREER PROSPECT

Stage 3	Leadership	Chief Technology Officer	Chief Executive Officer	Entrepreneur
Stage 2	Managerial	Technology Expert	Project Manager	Business Consultant
Stage 1	Professional	Project Engineers - hardware, software, networking System Engineers - systems, security, services Data Engineers / Scientists, Business Intelligence Product Management, Sales / Marketing Engineers Research / Training / Consulting		Business Education Marketing Government Management Others
Engineering Positions				Non-Engineering Positions

CONTACT US

Please refer to the brochure of the [Faculty of Engineering](#) or visit the website at <http://www.erg.cuhk.edu.hk> for admission details.



香港中文大學信息工程學系

Department of Information Engineering, The Chinese University of Hong Kong

Phone: (852) 3943-8385

Fax: (852) 2603-5032

Email: dept@ie.cuhk.edu.hk

Website: <http://www.ie.cuhk.edu.hk>



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