EMBRACE CHANGE
IN THE CENTURY OF
ENGINEERING
掌握變革・擁抱工程世紀

ELECTRONIC AND COMPUTER ENGINEERING

THINK OF ALL THE POSSIBILITIES

Are you curious about how things work?

Are you excited about the next big thing in the electronics world?

Do you want to join forces to advance a technology-powered future?

What is Electronic & Computer Engineering (ECE)?

We **create and integrate technologies into devices and systems that communicate and compute**. Electronic and computer engineers are the pioneers of rapidly advancing technology, from speech-operated apps, learning robots, ultra-thin smartphones and laptops, to 3D flat-screen displays and 4G wireless broadband networks.

We make information move faster, devices work smarter and systems run more efficiently.

Rigorous & Rewarding

Our world-class engineering education rewards you with a world of opportunity.

The Electronic and Computer Engineering Curriculum:

Our in-depth specialty courses broaden students' horizon in ECE and equip students with the necessary tools to proceed to advanced courses within the area.

Electromagnetics: From wireless to photonic applications
- e.g. Liquid crystal devices, Optical fiber

Signal Processing and Communications
- e.g. Social media delivery, processing and storage

Microelectronic Devices and Technology
- e.g. Nano fabrication, Integrated sensor and transducer

Integrated Circuits and Systems
- e.g. RF transceiver, Power management

Embedded Systems
- e.g. Smart phones

System Modeling, Analysis and Control
- e.g. Design, manufacturing and control techniques of robotic systems

Inspiring & Cutting Edge

The future begins with cultivating curiosity, challenging the norm and dreaming bold dreams. ECE faculty and students strive to be at the forefront of technology.

The function of the brain inspires research of ECE systems that communicate and compute. Our professors design intelligent and interactive systems that mimic the way the brain makes decisions.

Bertram Shi
- Bio-electronics, Signal & Information Processing
- Department Head & Professor

ECE's research analyzes a song's lyrics and acoustic signals to identify the moods and emotions behind the enjoyment of music. Our work enables listeners to better use music search engines.

Pascale Fung
- Speech, Language, Music & Information Processing
- Professor

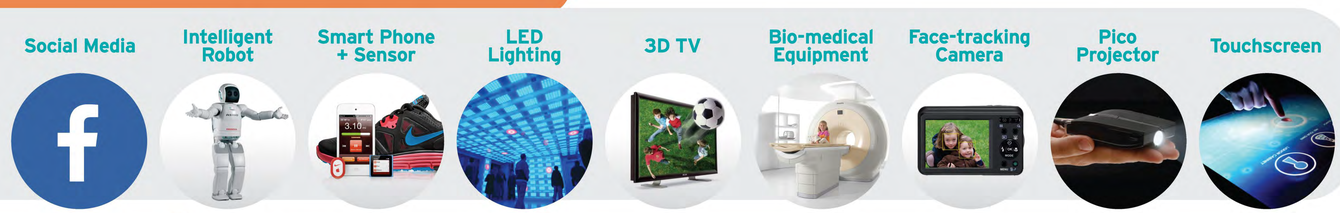
ECE professors are leaders in the field of wireless communications. They have defined many of the standards and technologies we now use in mobile and networking devices.

Ross D. Murch
- Wireless Communications & Networking
- Chair Professor

Imagine information travelling at the speed of light so you can download a Blu-ray movie within a minute. Our professors are conceiving and designing transceivers that hope to turn this dream into reality.

Patrick Yue
- Integrated Circuit Design
- Professor

We Turn Imagination into Reality



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

工學院
SCHOOL OF ENGINEERING

ece.ust.hk

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ELECTRONIC AND COMPUTER ENGINEERING

A World Of Opportunities

A leading education qualifies our graduates for many opportunities in Hong Kong and around the world. They become Electronic and Integrated Circuit (IC) Design Engineers, Communications Engineers, System Analysts and Designers, Information Technologists, Researchers, Financial Analysts, Senior Managers, Entrepreneurs...

A small selection of companies and universities ECE graduates have joined:

High-Tech Industry

DJI, HUAWEI, Microsoft

Business and Management

Cathay Pacific, Goldman Sachs, HSBC

Technical Positions

CLP 中電, ASTRI, MTR, PCCW

Postgraduate Studies

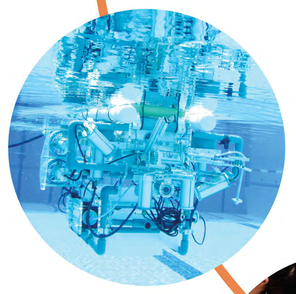
Harvard University, Massachusetts Institute of Technology, Stanford University, Penn

Entrepreneurial & Pioneering

Through openness to new ideas, innovation and persistence, we pioneer and promote rapidly advancing technology.

Designed and built by ECE alumni Frank Wang and Jianyu Song under the guidance of Professor Zexiang Li, the unmanned, robotic helicopter's intelligent tracking system enables drones to fly even in difficult and dangerous conditions. To continue his innovations, Frank formed a company in China which hires over 14,000 people today. Frank was selected by Forbes as one of the TOP 10 INNOVATORS in CHINA.

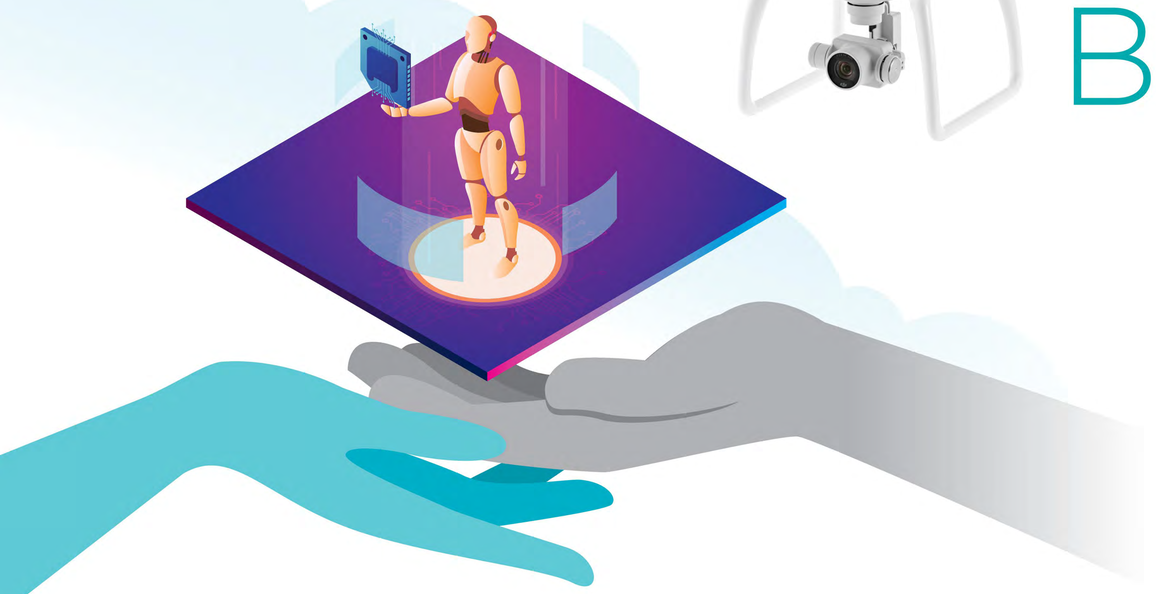
Honored with an asteroid named after him, Chan Yik Hei joined HKUST when he was only 16. His team's invention, iMenu, won the '2011 HKUST One Million Dollar Entrepreneurship Competition' student award and has become a core product of his company. He was awarded the Bronze Bauhinia Star (BBS) from the HKSAR Government.



Broaden Your Horizon

Hone the skills you learn in class through working in teams with ECE and other engineering students to participate in local, regional and international competitions. Through various creative and technical challenges, you learn to develop a true engineering mindset.

We offer you the education and opportunity to learn how to think, problem-solve and create like an engineer.



BEGIN YOUR FUTURE AT ECE!

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工學院
SCHOOL OF ENGINEERING

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Your Future > Begins

Department of
Electronic
& Computer
Engineering

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

Think of all the possibilities.

Are you curious about how things work? Are you excited about the next big thing in the electronics world? Want to join the force behind a technology-powered future?

Electronic and computer engineers are the pioneers of rapidly advancing technology. From speech-operated apps, learning robots, ultra-thin smartphones and laptops, to 3D flat-screen displays and 4G wireless broadband networks, we turn imagination into reality.

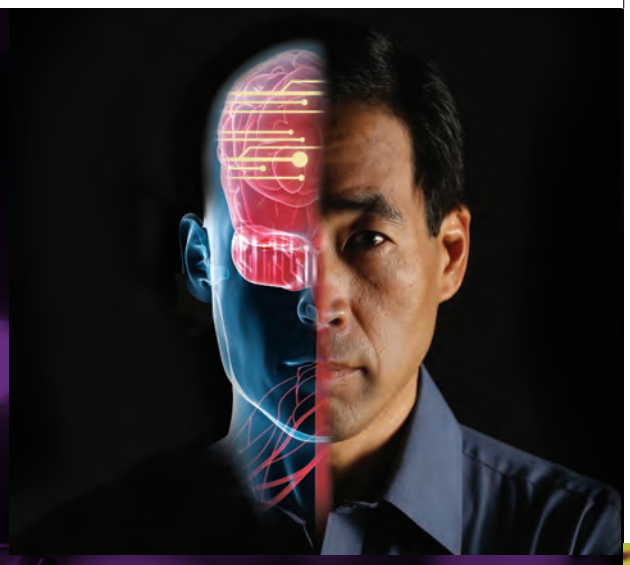
The Electronic and Computer Engineering Department (“ECE”) offers you the education and opportunity to learn how to think, problem-solve and create like an engineer.

“Make information move faster, devices work smarter and systems run more efficiently”

Inspiring & Cutting Edge

The future begins with cultivating curiosity, challenging the norm and dreaming bold dreams.

ECE faculty and students strive to be at the forefront of technology. Together, we positively contribute to society and seek to change the world.



Bertram Shi

Bio-electronics, Signal & Information Processing

Can a robot think like a human?

The brain is a fascinating inspiration for the design of ECE systems that communicate and compute. Professor Bertram Shi's research uses knowledge about the brain to design intelligent interactive systems, mimicking the way the brain integrates different signals (e.g. sound and images) to make decisions. Self-learning robots and adaptive brain-computer interfaces are just two of the real world applications.

ECE department invented flexible photon nanowells to efficiently capture light for next generation solar cells

Let There Be Light

Imagine a world where LED lights can illuminate, control smart devices and track movements. Imagine information travelling at the speed of light so you can download a Blu-ray movie within a minute. Professor Patrick Yue's research aims to design fully integrated transceivers that can tackle the bottle-neck in electronic circuits, turning imagination into reality.

Patrick Yue
Integrated Circuit Design
Professor

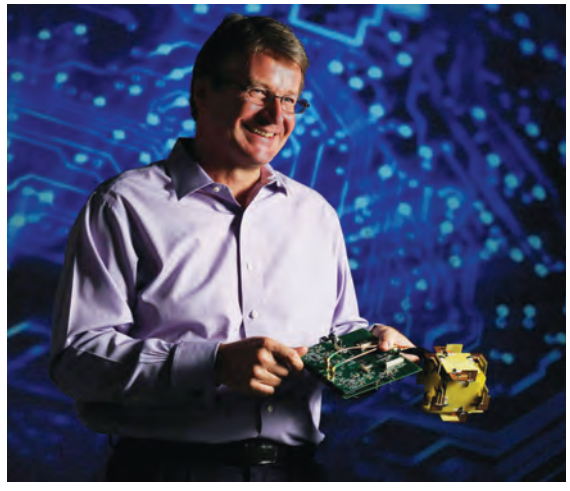
Pascale Fung
Speech, Language, Music &
Information Processing
Professor

In the Mood for Music

Emotion is behind the composition, performance and enjoyment of music. By analyzing a song's lyrics and acoustic signals, Professor Pascale Fung's research uses machine learning classifiers to identify whether the song is happy, exciting, melancholic, etc., thus enabling listeners to use music search engines to find songs based on mood categories.

Wireless: A World Without Limits

Professor Ross Murch and his colleagues are leaders in the field of wireless communications, having defined many of the standards and technologies we now use in mobile and networking devices. From superfast download speeds to novel multiple antenna systems, chances are, parts of your 4G smartphones use technologies pioneered right here at ECE.



Ross Murch
Wireless Communications & Networking
Chair Professor

Entrepreneurial & Pioneering

Electronic and Computer engineers are natural pioneers who challenge conventional limitations. By developing applications for leading edge research, they turn ideas into meaningful and practical solutions that change people's lives. Our department's vibrant entrepreneurial culture fosters students' creativity and encourages them to work hard and dream big. After all, the ideas inspired at ECE might be the beginning of your future.

Jianyu Song
PhD student

Frank Wang
BEng '06 / MPhil '11

Imagination Takes Flight

Conceived, designed and built by ECE students Frank Wang and Jianyu Song under the guidance of Professor Zexiang Li, the unmanned, robotic helicopter's intelligent tracking system enables it to execute tasks and return home even without wireless and global positioning signals.

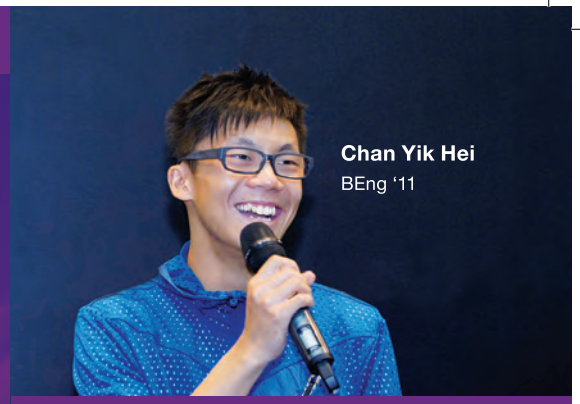
The helicopter proved itself during the 2008 Sichuan earthquake disaster relief mission where it flew in conditions that were too dangerous for manned helicopters. To continue his innovations, Frank formed a company in China which hires some 3000 people today.

Frank was selected by Forbes as one of Top 10 Innovators in China.

Zexiang Li
System and Automation
Professor

Our alumni and faculty have founded more than 30 companies, making ECE one of the most entrepreneurial departments.

In 2009, the ECE team's unmanned helicopter passed flight tests on Mount Everest where it endured severe conditions at high altitude.



Chan Yik Hei
BEng '11

From Inventor to Entrepreneur

Honored with an asteroid named after him, Chan Yik Hei joined UST when he was only 16. At ECE, he received solid training, such as in processor design and machine learning, to support his creative ideas. His team's invention, iMenu, won the '2011 HKUST One Million Dollar Entrepreneurship Competition' student prize, and is now a core product of a company he co-founded.

He was awarded the Bronze Bauhinia Star (BBS) from the HK Government in July 2016.

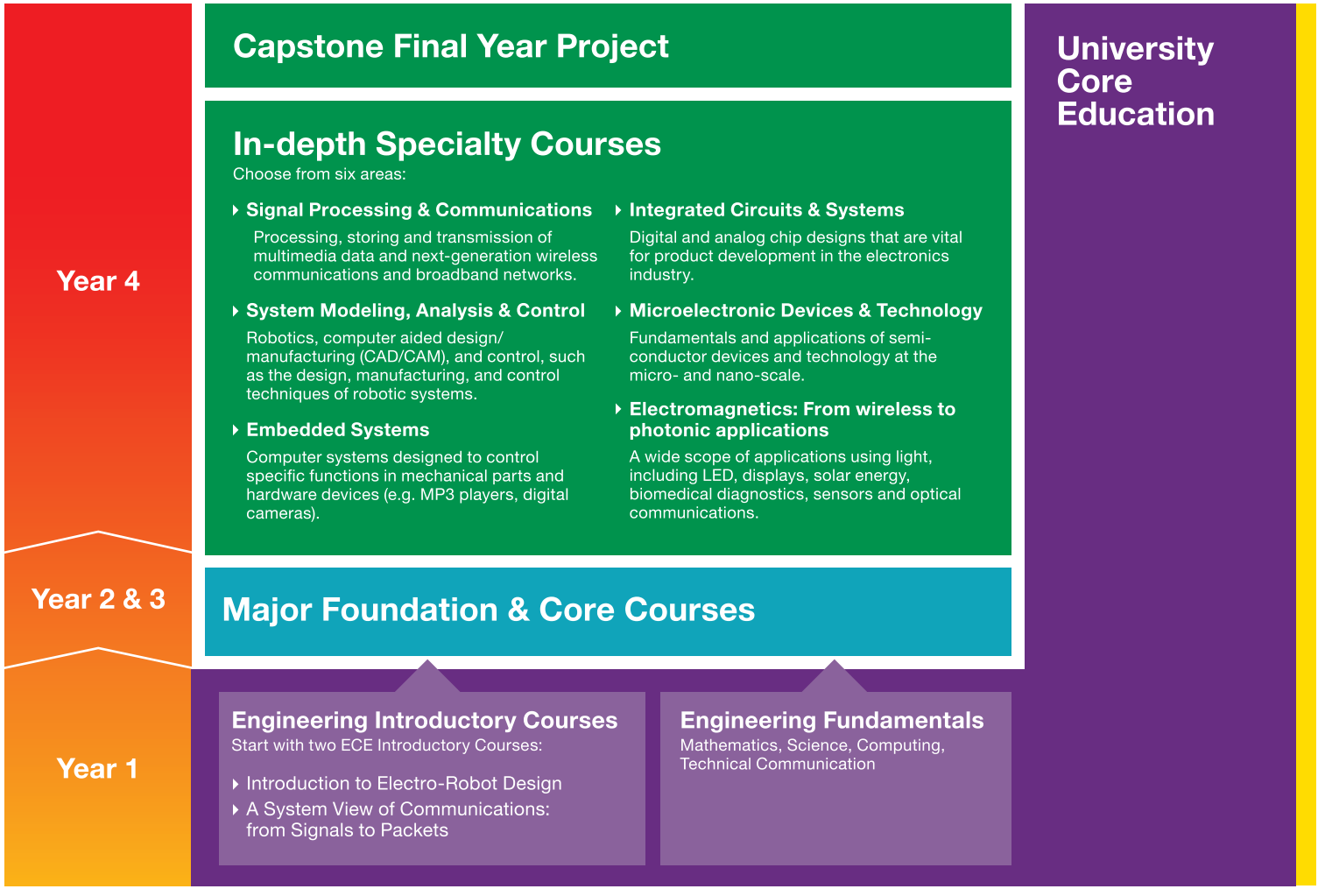
Invention with a Cause

Reading is something many of us take for granted. But, the visually impaired must depend on expensive and hard-to-find printers called Braille embossers to print pages they can read through their fingers. Patrick Lee (BEng '10), with supervising Professor Tim Woo, invented a low cost Braille embosser made from used inkjet printers. After winning numerous awards in Hong Kong, China and Malaysia, it is now commercially marketed.

Rigorous & Rewarding

ECE is a broad and fast changing field, so the faculty continuously updates the curriculum to ensure students receive a world-class engineering education and maintain a competitive edge. Within the department, expertise in a comprehensive range of areas allows students to enjoy the breadth, depth and flexibility of the program.

The Electronic & Computer Engineering Curriculum:



Through close interaction with the faculty, collaboration with fellow classmates and a wide variety of enrichment programs, our graduates gain a well-rounded education that equips them for challenging and fulfilling careers.

Optional Minor & Enrichment Programs

- Minor Programs (e.g. IT & Business)
- UROP (Undergraduate Research Opportunities Program)
- Internships
- Exchange Programs
- Competitions

International Exchange Programs

SHI Jiahui
BEng '10
University of Illinois at Urbana-Champaign

Broaden Your Horizon

Experience a whole new culture and learning environment. Make new friends, be adventurous and learn to be independent. ECE's relationships with top universities around the world allow you to find an exchange program that will complement your studies at HKUST.

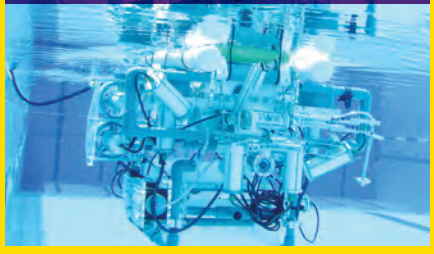
Final Year Projects

Anthony Lo & Ng Wai Shan
BEng '12
Demonstrating FYP project to industry visitors

Put It All Together

Nothing excites students more than channeling all their learning into practice by designing and creating a final product. After choosing a topic of their interest, students invite a faculty member to supervise the project and finally showcase it on Industrial Day.

Student Competitions



Underwater Robot
2017 Winner of Champion Award
MATE International ROV Competition
(Asia's First Championship over the past 16 years)

Collaborate to Win

Hone the skills you learn in class through working in teams with ECE and other engineering students to participate in local, regional and international competitions. Through various creative and technical challenges, you learn to develop a true engineering mindset.

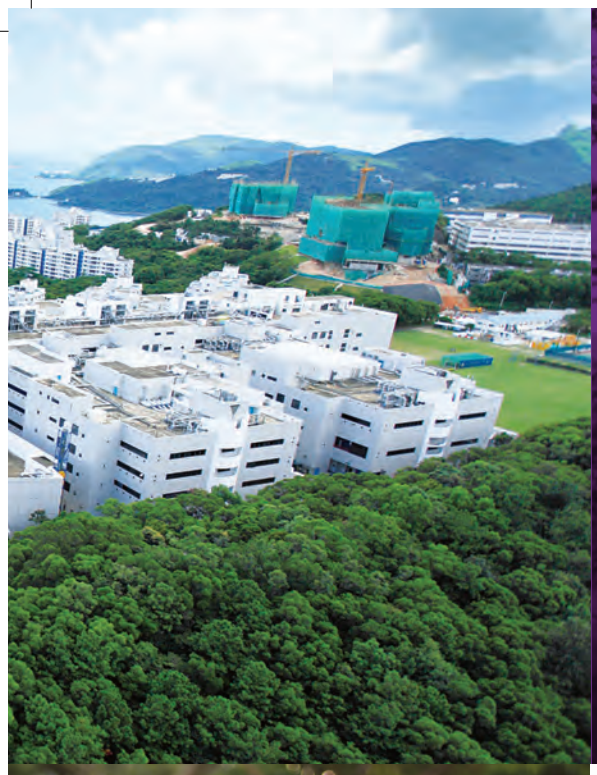
Internships

YU Fei
BEng '13
Internship at HP

Make the Connections

Acquire work experience through internships and bring your classroom learning to life. Sharpen your technical and interpersonal skills and build valuable professional networks and friendships for the future.

HKUST and Kyoto University students compete in an annual Tug-of-War, using micro-machines no wider than 5 strands of hair!



Vibrant & Diverse

The ECE department is one big family where students, staff and faculty work and play together. A wide range of activities balance out a rigorous academic schedule – a faculty versus students badminton tournament; a beachfront BBQ; or a hike along the many scenic trails in Sai Kung and beyond. Campus clubs, company visits, community work and service trips round out a rich and fulfilling university life.

Hanging Out:
Alex Yeung / Y3
Dickson Yau / Y1
Chacky Chak / Y1
Crystal Yan / Y3

Discussing Coursework:
Chan Wai Kit / Y1, **Prof. Ross Murch**,
Prof. CY Tsui / Associate Dean of Engineering (UG Studies)
Fu Wan Ting / Y2, **Kevin Cheung** / Y1, **Yolanda Lai** / Y2

> **“ I have been head of undergraduate affairs for years, and a hall warden before that. I do this because I love working with students. ”**
>
> CY Tsui
> Associate Dean of Engineering (UG Studies)
> Professor

Nurturing & Caring

Nurturing the ambitions and aspirations of students while fostering their personal growth and well being are important core values of the ECE department. An open learning environment ensures that students can sit down with a professor, brainstorm with a teaching associate, tackle a problem with an instructional assistant, or polish an essay with a communication tutor any time.

Just Chatting:
Prof. Volkan Kursun, **Addison Li** / Y2,
Ricci Wong / Y2, **Cherry Hui** / Y2

Working Together:
Jason Poon / Y2, **Crystal Yan** / Y3, **Bella Chan** / Y3,
Mr. Raymundo Tang Tang / Teaching Associate,
Jheri Wong / Y2

A World of Opportunities

With a world-class education in technical, analytical and problem-solving skills, our graduates are qualified for many opportunities in Hong Kong, China, the Asia Pacific region and around the world. Some pursue an engineering career in technology companies or technical positions for the government or financial services. Others enter business and management or continue on to graduate studies in overseas universities. And some students pursue their dream of becoming entrepreneurs and company founders. Whatever path they choose, ECE graduates benefit from the faculty's extensive academic and industrial international network.

"ECE sharpens your mind so you can be anything you want to be."

Kei May Lau
Photonics & Microelectronics
Chair Professor

A small selection of companies and universities ECE graduates have joined:

Microsoft · SmarTone · ASTRI · PHILIPS · PCCW · National Semiconductor · MTR · Cathay Pacific · DHL · HSBC · Goldman Sachs · Massachusetts Institute of Technology · Columbia University in the City of New York · Stanford University

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