



香港城市大學  
City University of Hong Kong

楊建業學術樓  
Yeung Kin-yip Academic Building



# School of Energy & Environment

## First in Hong Kong

With cutting-edge research and professional education in energy and environment

Undergraduate Programmes



Energy & Environment  
— The Grand Challenge



SEE Website



香港城市大學  
City University of Hong Kong

# Introduction



The **School of Energy and Environment (SEE)** – the first in Hong Kong – was founded in July 2009 with the mission to perform cutting-edge research and provide professional education in energy- and environment-related issues. The School is designed to tackle interactive relationship between energy and environment through the development of new scientific understanding and new technologies as well as the training of new professionals with broad knowledge in the areas of energy and environment.

We have a highly internationalised and experienced faculty from various countries specializing in atmospheric and climate science, biological science, chemistry, chemical engineering, energy economics, environmental engineering, environmental policy, mechanical engineering and materials science.

The School endeavours to produce a new breed of engineers and professionals capable of solving energy and environmental problems.



## Academic Programmes

### Majors

**Bachelor of Engineering in Energy Science and Engineering (BEngESE)**

**Bachelor of Engineering in Environmental Science and Engineering (BEngEVE)**

### Minors

**Atmospheric and Climate Science**

**Energy Technology**

**Sustainability**

## Energy/Environment in Science, Technology & Advanced Research (eSTAR)

“Energy/Environment in Science, Technology & Advanced Research (eSTAR)” is a stream introduced in our two existing undergraduate programmes, i.e. BEngESE and BEngEVE, for implementation from Semester A 2021/22, applicable to normative 4-year degree students of the 2020/21 entry and thereafter. With the introduction of the stream, it is expected that students will be equipped with cutting-edge skills and knowledge in emerging fields.

For details, please refer to the page at <https://www.cityu.edu.hk/see/programmes/undergraduate-programmes/eSTAR>



# Accreditation



Bachelor of Engineering in Energy Science and Engineering (BEngESE) is accredited by The Hong Kong Institution of Engineers (HKIE) meeting the academic requirement for HKIE Corporate Membership in both the energy and environmental disciplines, while Bachelor of Engineering in Environmental Science and Engineering (BEngEVE) is provisionally accredited by HKIE in the environmental discipline. Both BEngESE and BEngEVE students who have additionally completed a series of optional electives can apply to be a HKIE member in the Building Services (BSS) discipline.



## Remarks from the Industry

Mr. Paul W Y Poon, Vice Chancellor of **CLP Academy, CLP Power Hong Kong Limited** says the electrical and energy industry are keen for talents. "The undergraduate degree programme, Bachelor of Engineering in Energy Science and Engineering, offered by the SEE of CityU will nurture a new breed of professionals with diverse skills for the electrical and energy industry, which is important for the healthy development of our industry," he says.

Mr. C T Wan, Managing Director of **HK Electric** remarks, "The graduates of the undergraduate degree programme, Bachelor of Engineering in Energy Science and Engineering, offered by the SEE of CityU are capable of contributing innovative solutions to the governments and industrial as well as business sectors in the aspects of energy policy, energy management, research and development with all-round knowledge in energy. They will even be involved in providing new and feasible proposals of affordable and clean energy in the team of The Hongkong Electric."

Mr. Dr. Otto Poon, Chairman of **ATAL Engineering Group** comments, "With energy and environment high on the national and local agenda, it is most timely to see that the SEE of CityU will host an undergraduate degree programme of Bachelor of Engineering in Energy Science and Engineering. This programme will provide the much needed education to the young energy and environmental professionals for the sustainable development of Hong Kong."

Mr. Colin Chung, Managing Director of **WSP** points out, "The Bachelor of Engineering Programme in Environmental Science and Engineering provides a good training for the students to gain fundamental principles and practical knowledge in environmental engineering for their future development in the industry. The curriculum is unique in Hong Kong and tailor-made to the sustainable development of the environmental engineering industry locally and internationally."

## Career Opportunities

- **Energy engineers** in the following types of companies: utility (electricity and gas), energy service, environmental consulting, environmental engineering, transport (mass transit, buses, ferries, ocean-going vessels, airlines, aircraft services), government departments, etc.
- **Environmental/sustainability engineers** in corporations, property management companies, real-estate developers, and construction, manufacturing and transportation industries, etc.
- **Professionals** in companies/institutes researching, developing, manufacturing and/or selling products related to energy generation, storage, efficiency and conservation, and environmental technology to prevent, control, treat and remediate environmental pollution
- **Financial analysts and investors** in financial institutions with business in energy and environmental investments and/or loans
- **Consultants** in non-government organisations with activities related to energy and environment
- **Policy analysts** who develop policies and provide advice on matters related to energy, environment and sustainability

# Bachelor of Engineering in Energy Science and Engineering

工學士 (能源科學及工程學)

Level of Study:  
Bachelor's Degree

Normal Period of Study:  
4 years



## Aims of the Major

To create a new generation of intellects/graduates capable of discovering and providing innovative solutions to the intricate issues of energy crisis, renewable energy, global warming, climate change and pollution

## Courses under Major Requirement

### **Basic Core Courses**

- Chemical Sciences for Energy and Environmental Engineers
- Electromagnetic Principles for Energy Engineers
- Engineering Thermofluids I
- Fundamentals of Environmental Engineering
- Introduction to Energy and Environmental Data Analysis
- Mathematical Methods for Engineering

### **Major Core Courses**

- Climate Change and Adaptation Strategies
- Energy and Environmental Engineering Laboratory
- Energy and Environmental Policy
- Energy Efficiency for Buildings
- Engineering Thermofluids II
- Engineers in Society
- Environmental Impact Assessment for Sustainable Development
- Final Year Project
- Power Plant Engineering
- Project Management
- Sustainable and Renewable Energy
- Sustainable Engineering Systems: Modelling and Analysis
- Waste and Wastewater Treatment Engineering

### **Electives**

- Atmospheric Chemistry
- Atmospheric Science – An Introductory Survey
- Bioenergy Engineering: Principles and Applications
- Chemical Separations for Energy and Environmental Applications
- Combustion and Air Pollution Control
- Data Mining
- Design of Smart Cities and Sustainable Building
- Electrical Energy Conversion
- Energy and Carbon Auditing
- Energy Catalysis and Reaction Engineering
- Environmental Social Governance
- Gas Engineering
- Materials Engineering for Energy Applications
- Measurements of Air Pollutants
- Nanotechnology in Energy Conversion and Storage: Concepts and Creative Science
- Solar Energy Engineering
- Urban Sustainability
- Water and Water Resource Engineering
- Wind and Marine Energy

### **Optional Electives**

- Electrical Services
- Fire Engineering and Piped Services
- Fire Science and Modelling
- HVAC Engineering
- Power Electronics and Lighting Controls



# Bachelor of Engineering in Environmental Science and Engineering

## 工學士 (環境科學及工程學)

Level of Study:  
Bachelor's Degree

Normal Period of Study:  
4 years



## Courses under Major Requirement

### *Basic Core Courses*

- Chemical Sciences for Energy and Environmental Engineers
- Engineering Thermofluids I
- Fundamentals of Environmental Engineering
- Introduction to Energy and Environmental Data Analysis
- Mathematical Methods for Engineering
- Principles of Analytical Chemistry

### *Major Core Courses*

- Air Pollution
- Climate Change and Adaptation Strategies
- Engineering Thermofluids II
- Engineers in Society
- Environmental Engineering Laboratory
- Environmental Impact Assessment for Sustainable Development
- Environmental Systems Modelling
- Environmental, Safety, and Occupational Health Management
- Final Year Project
- Principles of Sustainability
- Project Management
- Waste and Wastewater Treatment Engineering
- Water and Water Resource Engineering



## Aims of the Major

To train students to be knowledgeable in environmental science and engineering so that they can work as environmental professionals to improve environmental performance and sustainability



### *Electives*

#### **Environmental Technology**

- Advanced Treatment and Management of Solid and Municipal Waste
- Chemical Separations for Energy and Environmental Applications
- Combustion and Air Pollution Control
- Environmental Measurements
- Hydraulics and Hydrology
- Measurements of Air Pollutants

#### **Sustainability and Environmental Management**

- Data Mining
- Design of Smart Cities and Sustainable Building
- Energy and Carbon Auditing
- Energy and Environmental Policy
- Environmental Social Governance
- Social Perspectives of Environmental Science and Engineering
- Sustainable and Renewable Energy
- Urban Sustainability

#### **Environmental Science**

- Air Quality Modeling
- Atmospheric Chemistry
- Atmospheric Science – An Introductory Survey
- Environmental Conservation and Resources Management
- Environmental Measurements
- Environmental Toxicology

### *Optional Electives*

- Electrical Services
- Electromagnetic Principles for Energy Engineers
- Energy Efficiency for Buildings
- Fire Engineering and Piped Services
- Fire Science and Modelling
- HVAC Engineering
- Power Electronics and Lighting Controls



# Industry Ready Programme

SEE has established the “Industry Ready Programme” in 2021, a unique programme with industry partners providing intensive training workshops for students on topics that are relevant for practitioners. Most student participants are placed in different companies for a 2-month internship related to energy, environment or sustainability after the training.

The **training workshops** and **internship** are arranged according to the following two tracks:

- **Energy/Building Energy Efficiency**
- **Environment/Sustainability**



## Acknowledgement of Support

SEE would like to thank the following strategic parties (in alphabetical order) for their support to the Industry Ready Programme.

- Allied Sustainability and Environmental Consultants Group Limited
- Arup
- Associated Engineers, Limited
- BEAM Society Limited
- Building Services Operation and Maintenance Executives Society
- Business Environment Council
- Chartered Institution of Water and Environmental Management Hong Kong
- CLP Power Hong Kong Limited
- Dunwell Group
- Federation of Hong Kong Industries Group 26 (Environmental Industries Council)
- Hong Kong Green Building Council
- Hong Kong Institute of Qualified Environmental Professionals Limited
- Schneider Electric Limited
- Swire Coca-Cola HK
- Telex Environmental and Energy Management Limited
- The Hong Kong and China Gas Company Limited
- Versatech ECO-Innovation Limited
- Versatech Energy Innovation Limited



# Student Exchange Programme



To widen the global horizon and enhance the learning experience, students are encouraged to join the Student Exchange Programme which allows them to undertake part of their degree study abroad. Students can apply for exchange places of partner institutions at both institutional and school level programmes.

Outbound exchange places at the following institutions are exclusively reserved for our SEE students:

Destination		Institution
Asia	South Korea	Ewha Womans University Hanyang University
	Taiwan	University System of Taiwan
Europe	France	INSA Lyon
	Germany	Leibniz University of Hannover Ludwig-Maximilians-Universität München
		University of Bremen
	Sweden	Chalmers University of Technology



## Message from Graduates/Students

“

My goal is to contribute to a more sustainable future, and an education in an environment-focused course was what I wanted. SEE was my favourite choice when applying to Universities back in 2017. I was intrigued by the broad coverage of environment-related topics. Professors and students here are always very friendly and welcoming I was able to find like-minded individuals from many different backgrounds. This trains me to be more outspoken, open minded, and empathetic.

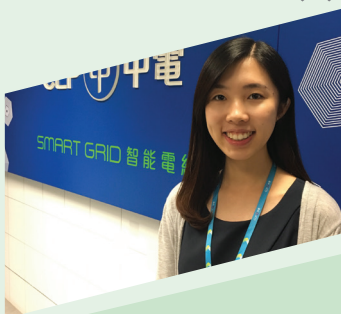
**KIRUPAKARAN Shruthe**  
(BEngEVE student, 2018 Cohort)



“

I am so lucky to be given the valuable opportunity from SEE to work as a summer intern in the CLP Power Hong Kong Limited. Through this experience, I further explore and discover my abilities and interests in the energy career field. Now I am better prepared for the future career.

**TUNG Hiu Ching Nicole**  
(BEngESE graduate, 2014 Cohort)



“

The programme is taught by a group of passionate professors who prepare us to be professional engineers. Other than training us into well-equipped individuals, we have opportunities to explore the world through overseas student exchange programme. Overall, I would like to comment that SEE is a great place to explore my interests and develop my career.

**CHAN Tsz Chung George**  
(BEngESE graduate, 2013 Cohort)



“

SEE presents its students with multiple opportunities for them to grow as engineers of tomorrow. From my time at the SEE, I consider myself fortunate to have interned at two multinational corporations that are constantly revolutionising the energy industry. Despite being a non-local student from India, I never felt disadvantaged and that's largely due to the nature of the staff and students of the SEE and the academic programme.

**SABHARWAL Rohan**  
(BEngESE graduate, 2016 Cohort)



# Competitions and Scholarship Awards



Innovation and Technology Scholarship Award (2014, 2015 & 2016)

Challenge Cup, Merit Prize (2016), Third Prize (2017)

Hong Kong Jockey Club Scholarship (2017 & 2018)

World Sustainable Built Environment International Youth Competition, The Most Innovative Urban Sustainability Award (2017)

11<sup>th</sup> National University Student Social Practice and Science Contest on Energy Saving & Emission Reduction, Second Prize (2018)

Energy Saving Championship Scheme, Hanson Outstanding Award (Environment Bureau & Electrical and Mechanical Services Department) (2018)

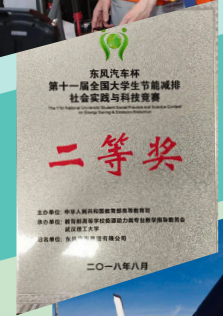
Sasaol Solar Challenge (South Africa), Sustainability Class Winner (2018)

HKIE Environmental Division Prize for Best Final-Year Environmental Project, First Runner-up (2019)

6<sup>th</sup> Hong Kong University Student Innovation and Entrepreneurship Competition, Second Runner-up (2020)

"Design the Future" Automotive Design Competition, The Best Futuristic Design Award (2020)

Champion, Social Innovation Inventor - Competition for Innovation Design 2020/21 (2021)



First Runner-up, "Green Energy Dreams Come True" Competition (2022)



## Contact

Address: G5703, 5/F, Yeung Kin Man Academic Building  
City University of Hong Kong  
Tat Chee Avenue, Kowloon  
Hong Kong SAR  
Tel: (852) 3442 9481 / 3442 2412  
Email: see.enquiry@cityu.edu.hk  
Website: <https://www.cityu.edu.hk/see>