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

City University of Hong Kong
The School of Energy and Environment (SEE) – the first and still the only one 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 internationalized 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
- Bachelor of Engineering in Environmental Science and Engineering

Minors
- Atmospheric and Climate Science
- Energy Technology
- Sustainability
Accreditation

Bachelor of Engineering in Energy Science and Engineering 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 is in the process of seeking accreditation by HKIE in the environmental 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.”

Dr. Otto Poon, Chairman of ATAL Analogue Group of Companies 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.”

Ir Colin Chung, Managing Director, Sustainable Development & Environment, China Region 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

• **Secondary school teachers** responsible for science and Liberal Studies curriculum
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 Engineers
- Electromagnetic Principles for Energy Engineers
- Engineering Thermofluids I
- Introduction to Energy and Environmental Data Analysis
- Fundamentals of Environmental Engineering
- 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
- Air Pollution Measurement and Control
- Atmospheric Chemistry
- Atmospheric Science – An Introductory Survey
- Bioenergy Engineering: Principles and Applications
- Design of Smart Cities and Sustainable Building
- Electrical Energy Conversion
- Energy and Carbon Auditing
- Energy Catalysis and Reaction Engineering
- Materials Engineering for Energy Storage Applications
- Nanotechnology in Energy Conversion and Storage: Concepts and Creative Science
- Nuclear Energy Engineering
- Solar Energy Engineering
- Water and Water Resource Engineering
- Wind and Marine Energy
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

**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

Courses under

**Basic Core Courses**
- Chemical Sciences for Environmental Engineers
- Engineering Thermofluids I
- Fundamentals of Environmental Engineering
- Introduction to Energy and Environmental Data Analysis
- Mathematical Methods for Engineering
- Principles of Analytical Chemistry
- Thermal-fluid Sciences I

**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, Safety, and Occupational Health Management
- Final Year Project
- Principles of Sustainability
- Project Management
- Sustainable Engineering Systems: Modelling and Analysis
- Waste and Wastewater Treatment Engineering
- Water and Water Resource Engineering

**Major Requirement**

**Electives**

**Environmental Technology**
- Advanced Treatment and Management of Solid and Municipal Waste
- Air Pollution Measurement and Control
- Environmental Measurements
- Hydraulics and Hydrology

**Sustainability and Environmental Management**
- Design of Smart Cities and Sustainable Building
- Energy and Carbon Auditing
- Energy and Environmental Policy
- Environmental Modelling and Geographic Information System
- Social Perspectives of Environmental Science and Engineering
- Sustainable and Renewable Energy

**Environmental Science**
- Air Quality Modeling
- Atmospheric Chemistry
- Atmospheric Science – An Introductory Survey
- Environmental Conservation and Resources Management
- Environmental Measurements
- Environmental Toxicology
The School strives to place students in a real-world work environment where they are guided to integrate theory and practice in real-life situations. This will help them gain practical knowledge and skills for employment.

In the summer of previous years, our undergraduate students worked as student interns in nearly 40 companies/organizations, including but not limited to ATAL Building Services Engineering Limited, CLP Power Hong Kong Limited, Mitsubishi Electric (Hong Kong) Limited, MTR Corporation Limited, Schneider Electric (Hong Kong) Limited, Ove Arup & Partners Hong Kong Limited, The Hong Kong Electric Company Limited, so on and forth.

**Internship Programme**

Internship in the Development Bureau and Ove Arup & Partners Hong Kong Limited (ARUP) and visiting study at The University of California, Berkeley...

These experiences equipped me to be a better self and paved the way for my career in ARUP.

LEE Hei Yan Zoe  
(BEngESE graduate, 2012 Cohort)

The programme has prepared me with everything I should know for the ‘real world’. I am now hired by one of the biggest engineering consultant firms in the world, Ove Arup & Partners Hong Kong Limited, assisting sustainable design for some of the future Hong Kong iconic buildings.

CHAN Wai Pang Kollsman  
(BEngESE graduate, 2012 Cohort)

I am now working as an assistant energy engineer at Siemens where I completed a 9-week summer internship through the network of my school. SEE has provided strong academic supports for its students. I was given opportunities to receive scholarship as a form of support for my effort. SEE is a small school but a big family! While equipping myself during 4 years of study, I also found love and happiness!

LEUNG Sin Ying Hetty  
(BEngESE graduate, 2012 Cohort)
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:

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<tr>
<th>Destination</th>
<th>Institution</th>
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<tr>
<td>Asia</td>
<td>Japan Hiroshima University</td>
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<td>Taiwan University System of Taiwan</td>
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<td>Singapore National University of Singapore</td>
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<td>South Korea Chung-Ang University Ewha Womans University</td>
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<td>Australia-Pacific</td>
<td>Australia Griffith University Queensland University of Technology University of South Australia Western Sydney University</td>
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<td>Europe</td>
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<td>Germany Karlsruhe Institute of Technology Leibniz University of Hannover Ludwig-Maximilians-Universität München The University of Bayreuth University of Bremen</td>
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<td>Sweden Chalmers University of Technology</td>
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<td>UK University of Exeter University of Leeds University of Sheffield</td>
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<td>North America</td>
<td>USA The University of Vermont</td>
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WANG Chang-ting Amy
(BEngESE graduate, 2013 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 student, 2014 Cohort)

Coming from a small island of Taiwan, I have the opportunities to take up summer internship in CLP, join the study tour to South Korea, and be awarded the Dean’s list, exchange at National University of Singapore. I now proceed to my research of final year project which allows me to collaborate with a few professors, PhD students and industrial partners. I have been presented with lots of routes to a big world with bright future.

CHAN Tsz Chung George
(BEngESE graduate, 2013 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.

DEDEN Fritz George
(BEngESE student, 2016 Cohort)

The SEE Summer Programme co-organized with Nanyang Technological University was a great opportunity for me to study as a student abroad. Classroom learning gave us the awareness of an alternative approach to our studies and the Singaporean way of life broadened our horizons.
Competitions and Scholarship Awards

Our student participated and won in different energy- and environmental-related competitions. Apart from competitions, students of our School were also awarded prestigious scholarships and awards.

SEE students awarded the Third Prize in the “Challenge Cup” National Competition – Hong Kong Regional Final, Hong Kong University Student Innovation and Entrepreneurship Competition 2016.

Student from our School worked with fellow students from other academic departments to participate in the “New Energy New Generation” Solar Car Competition (organized by the Environment Bureau and the Electrical and Mechanical Services Department of the Government of HKSAR, 2016) and “The Sasol Solar Challenge” Solar Car Competition (in South Africa, 2018).

Our students were winners of the prestigious “Innovation and Technology Scholarship Award Scheme” for three consecutive years. This scheme is organized by the Hong Kong Federation of Youth Groups and sponsored by the Innovation and Technology Commission and HSBC. Student winners participated in short-term attachment at renowned institutions including the University of California, Berkeley and University College London.

Our student was one of the only five recipients from CityU obtaining the prestigious “Hong Kong Jockey Club Scholarship” in 2017.

SEE students led a team with four other students from local and overseas universities to participate in the “World Sustainable Built Environment International Youth Competition”, jointly organized by the Construction Industry Council and the Hong Kong Green Building Council in 2017. They won the “The Most Innovative Urban Sustainability Award”. Student from our School also received “The Most Holistic Super-High-Dense Neighbourhood Award”.

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