School of Energy & Environment
First in Hong Kong
With cutting-edge research and professional education in energy and environment

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 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
- Bachelor of Engineering in Environmental Science and Engineering

**Minors**

- Atmospheric and Climate Science
- Energy Technology
- Sustainability
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 provisionally accredited by HKIE in the environmental discipline.

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.”

Ir 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.”

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.”

Remarks from the Industry

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
Courses under Major Requirement

**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.

**Bachelor of Engineering in Energy Science and Engineering**

**Level of study:** Bachelor’s Degree

**Normal period of study:** 4 years

**Basic Core Courses**
- Chemical Sciences for Energy and Environmental 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**
- Atmospheric Chemistry
- Atmospheric Science – An Introductory Survey
- Bioenergy Engineering: Principles and Applications
- Combustion and Air Pollution Control
- Design of Smart Cities and Sustainable Building
- Electrical Energy Conversion
- Energy and Carbon Auditing
- Energy Catalysis and Reaction Engineering
- Gas 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

**Courses under Major Requirement**
Bachelor of Engineering in Environmental Science and 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

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, 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

**Electives**

**Environmental Technology**
- Advanced Treatment and Management of Solid and Municipal Waste
- Combustion and Air Pollution 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/organisations, including but not limited to ATAL Building Services Engineering Limited, CLP Power Hong Kong Limited, Hong Kong Observatory, Mitsubishi Electric (Hong Kong) Limited, MTR Corporation Limited, Ove Arup & Partners Hong Kong Limited, Schneider Electric (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 word’. 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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<thead>
<tr>
<th>Destination</th>
<th>Institution</th>
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<tbody>
<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</td>
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<td>Ewha Womans University</td>
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<td>Hanyang University</td>
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<td>Pohang University of Science and Technology</td>
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<td>Australia-Pacific Australia Griffith University</td>
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<td>Queensland University of Technology</td>
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<td>University of South Australia</td>
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<td>Europe</td>
<td>Denmark Aarhus University</td>
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<td>France INSA Lyon</td>
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<td>Germany Karlsruhe Institute of Technology</td>
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<td>Leibniz University of Hannover</td>
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<td>Ludvig-Maximilians-Universität München</td>
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<td>The University of Bayreuth</td>
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<td>University of Bremen</td>
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<td>Sweden Chalmers University of Technology</td>
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<td>UK University of Exeter</td>
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<td>University of Leeds</td>
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<td>University of Sheffield</td>
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<td>North America USA The University of Vermont</td>
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**WANG Chang-ting Amy**  
(BEngESE graduate, 2013 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)

"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.

**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."
Students from our School have participated and won in different energy- and environmental-related competitions. Apart from competitions, students are also awardees of prestigious scholarships and awards.

SEE students were awarded the Third Prize in the “Challenge Cup” National Competition – Hong Kong Regional Final, Hong Kong University Student Innovation and Entrepreneurship Competition 2016. In 2017, another group of SEE undergraduates received the Merit Prize.

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

In 2018, our students would represent CityU in South Africa by taking part in the “Sasol Solar Challenge 2018”! As an interdisciplinary initiatives, the team would be composed of students from SEE and other academic units, including College of Business, College of Science and Engineering, School of Creative Media, Department of English, CityU Apps Lab and Special Interests Groups. Among the 35 students from the team, six would be selected to fly to South Africa to take part in the competition!

SEE students were awarded Second Prize in 11th National University Student Social Practice and Science Contest on Energy Saving & Emission Reduction 2018.

SEE student was awarded the CLP Engineering Studies Award in recognition of the academic achievements. A graduate trainee opportunity would be provided to the awardee. Alongside with this achievement, two of our recent graduates have just completed the Scheme A training in Energy Discipline!

Our students received the prestigious “Innovation and Technology Scholarship Award Scheme” for three consecutive years. This scheme is organised by the Hong Kong Federation of Youth Groups and sponsored by the Innovation and Technology Commission and HSBC.

Our students were awarded the prestigious “Hong Kong Jockey Club Scholarship” in 2017 and 2018.

SEE students led a team of four other students from local and overseas universities in the “World Sustainable Built Environment International Youth Competition 2017”, and won the “The Most Innovative Urban Sustainability Award”. One of our student also received “The Most Holistic Super-High-Dense Neighbourhood Award”.

Our student was awarded the Merit Prize of Outstanding Electrical Power and Energy Engineering Student Award 2018 organised by Power and Energy Section of The Institution of Engineering and Technology Hong Kong.
Hong Kong Diploma of Secondary Education (HKDSE) students may apply for admission to first-year studies in our degree programmes via JUPAS (JUPAS Catalogue No.: JS1051). During their first year, students will be admitted with an undeclared major and study a broad range of Gateway Education (GE) courses as well as core-curricular courses designed by the School. After one year of study in the School, they will enter one of the following majors:

- Bachelor of Engineering in Energy Science and Engineering (BEngESE)
- Bachelor of Engineering in Environmental Science and Engineering (BEngEVE)

Top 20% of students in the School will be allocated their first choice of major upon satisfying the selection criteria stipulated by the University while the remaining 80% of students will be allocated a major subject to availability of places and the selection criteria stipulated by SEE.

Entrance Requirements
For admission to the School of Energy and Environment, JUPAS applicants must meet the requirements as shown in the tables below. The levels indicated are the minimum acceptable but possession of such qualifications in no way guarantees acceptance.

Assessment
Admission Score (with Weighting Applied) for Main Consideration

<table>
<thead>
<tr>
<th>JUPAS code</th>
<th>No. of subjects</th>
<th>Subject</th>
<th>Weighting</th>
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<tbody>
<tr>
<td>JS1051</td>
<td>4 core + 2 elective</td>
<td>Chinese Language</td>
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<tr>
<td></td>
<td>subjects</td>
<td>English Language</td>
<td>2</td>
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<td></td>
<td></td>
<td>Mathematics (Compulsory Part)</td>
<td>2.5</td>
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<tr>
<td></td>
<td></td>
<td>Liberal Studies</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elective 1</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elective 2 (including M1/M2)</td>
<td>1</td>
</tr>
</tbody>
</table>

For more details of the entrance requirements, please refer to the website of Admissions Office at https://www.admo.cityu.edu.hk/jupas/entreq/bd
Direct/Non-JUPAS Applicants

**Entrance Requirements**
Students with qualifications other than HKDSE may apply for admission to first-year studies in our degree programmes via the route of direct/non-JUPAS Application. There are mainly three types of applicants with corresponding admission arrangements as follows:

- **Applicants holding a 12-year school-leaving qualification, or a partially completed sub-degree qualification**
  - Admission to first-year studies (Four-year Curriculum)

- **Applicants holding a 13-year school-leaving qualification, IB Diploma, GCEAL or Bachelor’s degree study**
  - Admission to first-year studies (Four-year Curriculum)
  - OR
  - Admission to a major in BEngESE or BEngEVE with Advanced Standing I (non-senior-year)
  - OR
  - Admission to a major in BEngESE or BEngEVE with Advanced Standing II (senior-year for local students only)

- **Applicants holding an Associate Degree, Higher Diploma or equivalent qualifications**
  - Admission to a major in BEngESE or BEngEVE with Advanced Standing I (non-senior-year)

**Assessment**
In addition to meeting the General Entrance Requirements as stipulated by the University, as a guide for applications, direct/non-JUPAS applicants are expected to have studied a subject related to Mathematics, Chemistry, Physics or Science at a high school or a post-secondary institution.

For details, please refer to the website of Admissions Office at https://www.admo.cityu.edu.hk/direct/entreq/bd/.