School of Energy & Environment
First in Hong Kong

Energy & Environment — The Grand Challenge

Undergraduate Programmes

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.

Introduction

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 provisionally accredited 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.”

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.”

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

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
- Combustion and Air Pollution Control
- 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
- Urban Sustainability
- Water and Water Resource Engineering
- Wind and Marine Energy

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

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

Electives
- 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
  - 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
Internship Programme

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 Arup, ATAL Building Services Engineering Limited, CLP Power Hong Kong Limited, Hong Kong Observatory, Mitsubishi Electric (Hong Kong) Limited, MTR Corporation Limited, Schneider Electric (Hong Kong) Limited, The Hong Kong Electric Company Limited, WSP Asia Limited, so on and forth.

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:

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<tr>
<th>Destination</th>
<th>Institution</th>
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<tr>
<td>Asia</td>
<td>Japan Hiroshima University Hongikido University</td>
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<td>Singapore National University of Singapore</td>
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<td>South Korea</td>
<td>Chung-Ang University Ewha Womans University Hanyang University Pohang University of Science and Technology</td>
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<td>Latin</td>
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<td>Asia-Pacific</td>
<td>Australia 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 Essex 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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Message from Graduates/Students

LEE Hei Yan Zoe
(BlEngSE graduate, 2012 Cohort)

I am now working as an 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!

CHAN Wai Pang Kollsman
(BlEngSE graduate, 2012 Cohort)

The programme has prepared me with everything I should know for the ‘real world’. I am now Engineer in Jacobs China Ltd., taking care of sustainability works.

LEUNG Sin Ying Hetty
(BlEngSE graduate, 2012 Cohort)

I am now working as an 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!

WANG Chang-ling Amy
(BlEngSE 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
(BlEngSE graduate, 2014 Cohort)

I came 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.

DEDEN Fritz George
(BlEngSE student, 2016 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
(BlEngSE graduate, 2013 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.

The programme has prepared me with everything I should know for the ‘real world’. I am now Engineer in Jacobs China Ltd., taking care of sustainability works.
Competitions and Scholarship Awards

Our students were awarded the Third Prize and Merit Prize in the “Challenge Cup” National Competition – Hong Kong Regional Final, Hong Kong University Student Innovation and Entrepreneurship Competition in 2016 and 2017 respectively.

Student from our School worked with fellow students from other academic units 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 represented CityU in South Africa by taking part in the “Sasol Solar Challenge 2018”. As an interdisciplinary initiative, the team was composed of not only SEE students, but students from other units, Colleges and Schools. The team joined the competition in South Africa and won the “Sustainability Class Award”.

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

SEE student won the CLP Engineering Studies Award in recognition of the academic achievements. A graduate trainee opportunity was provided to the awardee. Alongside with this achievement, two of our recent graduates had also 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”.

Under the supervision of Prof. Michael Leung, a recent graduate obtained the “Hanson Outstanding Award” under the “Competition for Students - Secondary and Postsecondary School category” of Energy Saving Championship Scheme 2018. The Scheme was jointly organised by Environment Bureau and the Electrical and Mechanical Services Department.

Contact

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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.