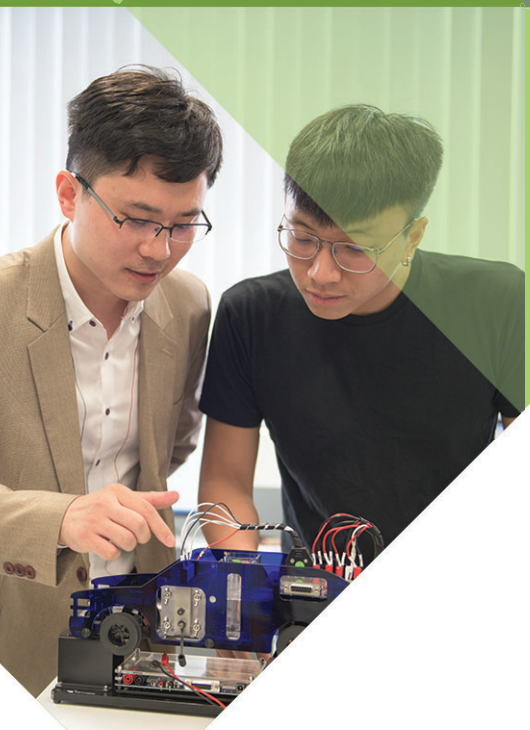


Energy and Environmental Engineering

JUPAS Code: JS4462

Hosted by

Department of Mechanical and Automation Engineering
The Chinese University of Hong Kong

B.Eng. (Hons) in Energy and Environmental Engineering

Introduction

The Energy and Environmental Engineering (EEEN) Programme at CUHK provides the engineering knowledge and training for its graduates to tackle a broad spectrum of energy issues pertaining to sustainable, environmental and building technologies. The Programme puts forth a strong platform and broad-based perspective for learning and understanding the relations and trade-offs between energy and environment, and the ensuing engineering challenges in attaining viable solutions.

Programme Features

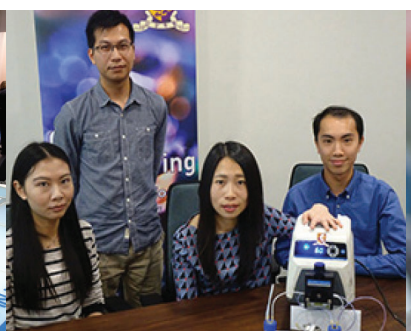
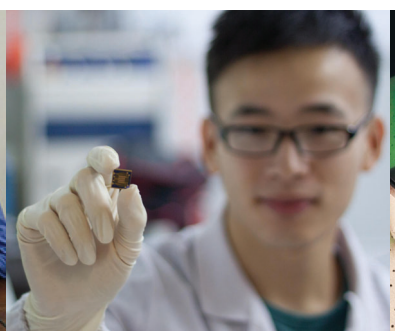
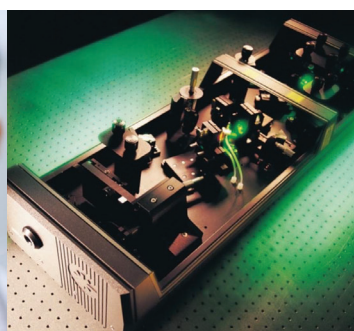
- Interdisciplinary & Problem-Solving:
  - Fundamental knowledge and problem-solving skills in energy principles, technologies, and systems.
  - Interdisciplinary major required and core elective courses are co-designed with the Earth System Science Programme, and a host of elective courses from the Environmental Science Programme, and the Department of Geography and Resource Management.
- Three Study Streams:
  - **Sustainable Energy Technology Stream**, for enhanced coverage on renewable energy generation, system design, storage, distribution, and management;
  - **Green Building Technology Stream**, for fundamental knowledge on environmental performance assessment and energy management of urban buildings;
  - **Environmental Engineering Stream**, for principles of natural and built environments, and air pollution monitoring and control challenges.

Programme Outcomes

Students will acquire fundamental knowledge in energy principles, technologies and environmental sciences, as well as the ability to facilitate solutions to problems related to energy technologies, environmental engineering, urban pollutions, building performance assessment and control, etc., that contribute to the well-being of our environment and society.

Career Prospects

The Programme will afford graduates strong career prospects. They will find employability in current and emerging areas of energy systems, environmental monitoring and control, sensor instrumentation, and smart and green building technologies, among others. They can land jobs in Government, electric companies and power grid enterprises, building and construction industries, consulting firms and green groups, renewable technology companies, and vehicle industries, to cite just some of the possibilities. They can also pursue postgraduate studies in their specialized areas of interest in Hong Kong or overseas.

Programme Curriculum

Year 1

Faculty Package
ENGG1110 Problem Solving By Programming
ENGG1120 Linear Algebra for Engineers
ENGG1130 Multivariable Calculus for Engineers

Foundation Courses
MAEG1020 Computational Design and Fabrication
MATH1510 Calculus for Engineers
PHYS1110 Engineering Physics: Mechanics and Thermodynamics

University Core Requirements
English (3 units), Chinese (3 units), College GE (3 units), Foundation GE (3 units), DL&CT-R (3 units), PE (2 units), Understanding China (0-1 unit) & Hong Kong in the Wider Constitutional Order (0-1 unit)

Year 2

Foundation Courses
ENGG2720 Complex Variables for Engineers (2 units)
ENGG2740 Differential Equations for Engineers (2 units)

Major Required Courses
EEEN2020 Renewable Energy Technologies
EEEN2040 Heating, Ventilation and Air-Conditioning (HVAC) I
ELEG2202 Fundamentals of Electric Circuits
MAEG2030 Thermodynamics
MAEG2601 Technology, Society and Engineering Practice (2 units)

Major Electives
Core or Non-Core Elective (0-3 units)

University Core Requirements
English (3 units), Chinese (2 units), Foundation GE (3 units), Other GE (2 units), Understanding China (0-1 unit) & Hong Kong in the Wider Constitutional Order (0-1 unit)

EEEN2602 Engineering Practicum (1 unit)
(5 weeks)

Year 3

Major Required Courses
EEEN2030 Energy and Environmental Economics and Management
EEEN3030 Engineering Materials
ELEG3207 Introduction to Power Electronics
ESSC2800 Introduction to Environmental Engineering
MAEG3030 Fluid Mechanics

Major Electives
Core or Non-Core Electives (3-9 units)

University Core Requirements
English (2 units), College GE (3 units) & Other GE (3 units)

Year 4

Major Required Courses
EEEN4998 Final Year Project I
EEEN4999 Final Year Project II
MAEG4030 Heat Transfer

Major Electives
Core or Non-Core Electives (3-9 units)

University Core Requirements
Other GE (2 units)

Major Electives

Sustainable Energy Technology Stream
(C)/(R) EEEN4020 Solar Energy and Photovoltaic Technology
(N)/(E) CHEM4280 Chemistry in Biofuel (2 units)
(N)/(E) EEEN4010 Kinetic Energy Harvesting Devices and Systems
(N)/(E) EEEN4030 Nuclear Energy and Risk Assessment
(C)/(E) EEEN4050 Energy Storage Devices and Systems
(C)/(E) EEEN4060 Energy Distribution
(N)/(E) ELEG3601 Introduction to Electric Power Systems
(N)/(E) MAEG5120 Nanomaterials and Nanotechnology: Fundamentals and Applications
(N)/(E) MAEG5150 Advanced Heat Transfer and Fluid Mechanics

Green Building Technology Stream
(C)/(R) EEEN3010 Heating, Ventilation and Air-Conditioning (HVAC) II
(C)/(R) EEEN4070 Green Building and Sustainable Technologies
(N)/(E) EEEN3020 Energy Utilization and Human Behavior
(C)/(E) MAEG3050 Introduction to Control Systems
(N)/(E) MAEG3920 Engineering Design and Applications
(N)/(E) MAEG5150 Advanced Heat Transfer and Fluid Mechanics

Environmental Engineering Stream
(C)/(R) ESSC4240 Air Pollution Science and Engineering
(N)/(R) GRMD3203 Urban Environmental Problems
(C)/(E) EEEN4070 Green Building and Sustainable Technologies
(N)/(E) ENSC3230 Principles of Environmental Protection and Pollution Control
(N)/(E) ENSC4240 Environmental Impact Assessment
(N)/(E) ESSC2020 Climate System Dynamics
(N)/(E) GRMD4204 Environmental Planning and Assessment
(C)/(E) MAEG4080 Introduction to Combustion
(N)/(E) MAEG5140 Materials Characterization Techniques

Others
(N) CSCI1020 Hands-on Introduction to C++ (1 unit)
(N) CSCI2040 Introduction to Python (2 units)
(N) CSCI2100 Data Structures
(N) ENGG1820 Engineering Internship (1 unit)
(N) ENGG2760 Probability for Engineers (2 units)
(N) ENGG2780 Statistics for Engineers (2 units)
(N) ESSC3200 Atmospheric Dynamics
(N) ESSC3220 Atmospheric Chemistry
(N) ESSC3320 Hydrogeology
(N) ESSC3600 Ecosystems and Climate
(N) ESSC3800 Global Environmental Change
(N) ESSC4540 Remote Sensing - Principles and Applications
(N) GRMD2404 Energy and Society
(N) GRMD3202 Environmental Management
(N) GRMD3403 Methods for Resource Evaluation and Planning
(N) GRMD4202 Hydrology and Water Resources
(N) GRMD4401 Energy Resources for Carbon Neutrality
(N) PHYS4420 Physics in Meteorology

Summary

	Units
University Core Requirements (39 units)	
- General Education (College/Foundation/Others)	19
- Languages (English & Chinese)	13
- Understanding China	1
- Hong Kong in the Wider Constitutional Order	1
- Digital Literacy and Computational Thinking-R (DL&CT-R)	3
- Physical Education	2
Major Requirements (75 units)	
- Faculty Package	9
- Foundation Courses	13
- Required Courses	33
- Elective Courses (Core & Non-Core)	14
- Final Year Projects	6
Free Electives (9 units)	9
Total	123

(C) - Core Electives (at least 6 units are required)
(E) - Electives in specific streams
(N) - Non-Core Electives
(R) - Required Courses in specific streams
To qualify for a stream, students must complete a minimum of 12 units taken under the stream.

The course list above is subject to curriculum changes. For fulfillment of graduation after admission, please refer to Undergraduate Student Handbook available at Academic and Quality Section Registry website: http://www.aqs.cuhk.edu.hk. Updated information will also be uploaded to EEEN Programme website: http://www.eeen.cuhk.edu.hk.

EEEN Scholarship

Industrial Scholarship

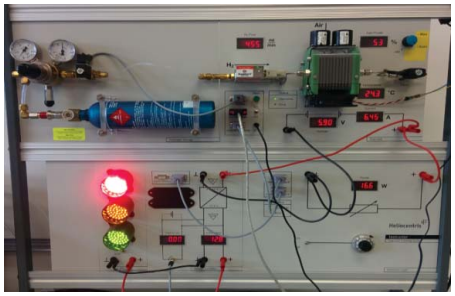
With the generous donations from a number of industrial companies, many industrial scholarships are set up specifically for EEEN students.

Internship and Student Exchange Programme

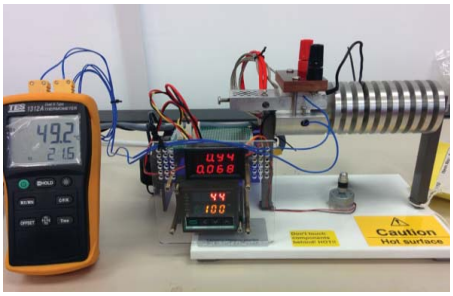
EEEN students could opt for summer internship, work-study, or international student exchange programme. The in-field training helps prepare students to be the next generation professional engineers.

Top-tier Teaching and Research Laboratory Facilities

Catalyst Test Rig for Energy and Environmental Applications



Hydrogen Fuel Cell Applications



Thermoelectric Power Generator

Project Competitions and Field Trips

Award Winning at "New Energy New Generation" Solar Car Competition

Field Trip to Zero Carbon Building

Hong Kong Green Building Council "My Green Space" Student Competition

Visit of Nobel Laureate, Prof. Steven Chu / Visit from Environmental Protection Department, HKSAR

ENER/EEEN Alumni

CHAN Tsz Wing Nicky (BEng in ENER 2018)
Graduate Environmental Consultant, AECOM Asia Company Limited
The duties of this position mainly relate to undertaking projects of Green Building Certificate Scheme, like BEAM Plus. Basic knowledge, which related to Building Engineering and requirement of the Green Building Scheme, is necessary for working in this post. As working here, it provides opportunities for building my career in Green Building Industry.

HO Ka Chun (BEng in EEEN 2022)
Graduate Trainee, CLP Power Hong Kong Limited
Climate change and the energy crisis are the most pressing concerns of our times, but the ongoing development of new technologies gives us hope to combat them. Combining different facets of the energy and environmental industry, the EEEN programme offers a professional pathway to the sustainability field. I decided to study EEEN because of the tremendous opportunities and market needs for talents in the field. With cross-multidisciplinary courses, internships, competitions, and career-sharing sessions, I have gained not only textbook knowledge but also in-depth industry insights. The hands-on experiences in architecture, mechanical, and electronic design have equipped me to contribute to energy transition in Hong Kong after joining CLP Power Hong Kong Limited as a Graduate Trainee.

YEUNG Sze Hang (BEng in EEEN 2022)
Graduate Trainee, ATAL Building Services Engineering Limited
EEEN is a holistic programme that covers not only textbook theory but also physical industry training. It gives us autonomy and support in academics, allowing us to progress our careers and pursue our dreams. EEEN provides diverse and in-depth course options for students to explore different fields both within and outside of the engineering industry and equips us to become professional consultants and engineers. I would like to thank my professors and all the amazing people that I have met at EEEN. The opportunities I had here have prepared me to become a Graduate Trainee at ATAL Building Services Engineering Limited. In the future, I hope to continue to make substantial contributions by applying what I have learned at EEEN to make our community a better place.

Admissions

For details of the admission information, please refer to the MAE Department website: http://www.mae.cuhk.edu.hk or the Office of Admissions and Financial Aid website: http://www.oafa.cuhk.edu.hk.

Enquiry

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