Master of Science (MSc) in Energy and Environment

Dr. Chunhua LIU (劉春華), Programme Leader

Programme Information

Associate Professor,
School of Energy and Environment
City University of Hong Kong
Energy demand

~78% of energy comes from fossil fuel

Problems  Sustainability
Pollution  Climate change
Energy sustainability

2020

Energy demand ↑, but supply ↓

Requires development of renewable energies
Effect of energy usage: pollution

**CO₂**

**CH₄**
Consequences on global temperature

Global surface warming (°C)

1°C increase in last century

Future predictions
Climate change

Columbia Glacier c. 1980

Columbia Glacier 2005

Arapaho Glacier 1898

Arapaho Glacier 2003
Climate change
Urgent Energy and Environment Issues

Energy generation and consumption

Environmental pollution and climate

An Inconvenient Truth!
World’s biggest challenges

Energy crises

Environmental crises

Need **professionals** to lead the world in solving energy and environmental issues, through research, policy making, applications and education, etc.

The **first and only** academic programme in Hong Kong that focuses on both energy and environment.
Programme at SEE

Master of Science (MSc) in Energy and Environment

One-year full time self-financed programme
Two-year part time self-financed programme

For students intending to work in companies after graduation
Or to gain more knowledge for current employment
Curriculum Design

E_{nergy} & E_{nvironment}

Global warming/climate change
Sustainability development

CO_{2} emission
economics
law
policy
technologies
climate
efficiency
pollution

Emphasis on both engineering and soft science
With references to current events and news
Curriculum Design

MSc course requirements: 30 credit units

**Plan A:**
- 5 core courses
- 5 electives

**Plan B:**
- 5 core courses
- 3 electives
- Dissertation (≡2 courses)

**Duration:**
- Full-time: 1 year (Max. 2.5 years)
- Part-time: 2 years (Max. 5 years)

**Focus:**
address issues of climate change, air pollution, energy savings/efficiency, renewable energies, Energy and environment economics, etc.
5 core courses (必修科目)

- Energy Generation and Storage Systems
- Energy Efficiency and Conservation Technologies
- Environmental and Energy Policy
- Environmental Pollution: Theories, Measurement and Mitigation
- Data Analysis in Environmental Applications

Science and technology + knowledge sets in management
Electives (選修科目)

- Emerging Energy Technologies
- Experimental Techniques in Energy and Environment
- Energy, Environment and Sustainable Development
- Energy and Environmental Economics
- Energy and Environmental Law
- Environmental Modelling
- Dissertation*

- Air Pollution and Atmospheric Chemistry
- Building Performance Assessment
- Carbon Audit and Management
- Climate Change: Science, Adaptation and Mitigation
- Ecosystem and Environmental Toxicology
- Solid Waste Treatment and Management
- Wastewater Engineering and Water Quality Assessment
SEE6999 Dissertation (專題論文)

- Credit Units: 6 (2 semesters)
- Independent research and development work, topic to be determined by student and a professor
- Aim: to develop expertise in a chosen subject area through the application of theories and techniques taught in the programme.

Examples of previous dissertation topics (full list):

- Developing a smart bus distribution model for improving Hong Kong roadside air quality
- Research on the synoptic weather pattern of extreme temperature in Macao
- Photocatalytic Water Splitting Over Quantum Dot-Sensitised Titanium-Graphene Nanoassemblies
- Waste to Energy – A sustainable Solution to Municipal Solid Waste Management in Hong Kong
- Turning carbon dioxide into fuel: computational study of catalytic CO2 reduction
- Energy Efficiency and Thermodynamic Analysis of Advanced Oil Free Magnetic Bearing Chiller System
Route to becoming a Chartered Engineer (CEng)

*MSc Degree accredited by **IGEM** (Institute of Gas Engineers and Managers) and **CIWEM** (Chartered Institution of Water and Environmental Management) from United Kingdom

**IGEM** is a chartered professional body licensed by the UK Engineering Council (EC).

**CIWEM** is the leading international Royal Chartered professional body dedicated to the water and environment sector.

Graduates partially satisfies academic requirement for IGEM & CIWEM membership*. If graduate works for gas industry/ water and environment fields in the future (i.e., equivalent professional experience), he/she only requires a professional examination to become Chartered Engineer (CEng), UK

* with an accredited BEng/BSc Degree from any of Washington Accord’s 19 Signatories

⇒ Can then become member of HKIE through reciprocal recognition agreement


School of Energy and Environment, City University of Hong Kong
Modes of teaching

- Lectures
- Tutorial
- Homework assignment
- Readings
- Group project
- Presentation
- In-class discussion
- Experiments/demo
- Field trips
- Tests/Exams
- Etc.

Language of instruction: English

Typical course schedule:
Weekdays
7-10pm
Field Trips - Zero Carbon Building
Field Trips - ASB Biodiesel Plant
Field Trips - T Park
Field Trips - CLP ElectriCity
Field Trips - International Commerce Centre
Solar Tracking Project
### Number of MSc Graduates

<table>
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<tr>
<th>Year</th>
<th>No. of MSc students graduated</th>
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</thead>
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<tr>
<td>Year 2011</td>
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<tr>
<td>Year 2012</td>
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<td>Year 2018</td>
<td>78</td>
</tr>
<tr>
<td>Year 2019</td>
<td>49</td>
</tr>
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</table>
Job placement of graduates

**Current career status of MSc graduates**
- Full-time Employment: 75%
- Further studies (PhD): 4%
- Seeking employment: 21%

**Range of employment sectors**
- Community, Social & Personal Services: 15%
- Education: 6%
- Engineering, Architectural & Technical Services: 9%
- Financial / Insurance: 3%
- Manufacturing: 6%
- Transport, Storage & Communications: 61%
Ties with external companies and organizations

- Energy providers/systems
- Transportation companies
- Environmental companies
- Construction/building companies
- Energy/environmental consultants
- Government organization
- Non-profit organizations, etc.

Companies/organizations that have ties with our school
Who should take this programme?

Managers  Environmental/sustainability managers and employees in manufacturing, construction, private sectors, etc.

Employees  Government, NGO officials

Officials  Educators

Teachers  Engineers from different fields interested in energy and environment

New graduates
Entrance requirements for MSc

Applicants with an undergraduate degree in sciences or engineering;

OR

Applicants with a degree in other disciplines but with Hong Kong A-level Physics (or equivalent) or sufficient working experience in the related fields (to be considered on a case by case basis)

Additional English proficiency requirements for applicants from an institution where the medium of instruction is not English

TOEFL® score 550 (paper-based test) or 79 (internet-based test); or overall banding 6.5 in International English Language Testing System (IELTS)®; or score 450 in the new College English Test (CET6) of Chinese mainland or a pass in the old CET-6 test; or other equivalent qualifications.

@TOEFL and IELTS scores are considered valid for two years. Applicants are required to provide their English test results obtained within the two years preceding the commencement of the University’s application period.
Why should you choose our programme?

The 4Ps

- Programme
- Place
- People
- Price
Why should you choose our programme?

Programme

HKU
MSc Energy Engineering
MSc Environmental Engineering

HKUST
MSc Environmental Engineering and Management
MSc Environmental Health and Safety

PolyU
MSc Environmental Management and Engineering

HKBU
MSc Environmental and Public Health Management
MSc Green Technology (Energy)

CityU
MSc Energy and Environment

Multidisciplinary
• Encompass both aspects
• Emphasize close ties between 2 disciplines

More breath compared to other programme in HK
Why should you choose our programme?

Place

Kowloon Tong

Centralized, convenient, main intersection of major transport network

City University main campus

Kowloon Tong
Why should you choose our programme?

People

High calibra professors from top university in the world, for example
Application

▪ To Apply
Please click the following link:
http://www.sgs.cityu.edu.hk/prospective/apply/notestpg
Application will be closed by 31 March 2021 (non-local)
by 31 May 2021 (local)

▪ Enquiry
Tel: 3442 2414 / 3442 7496
Email: see.enquiry@cityu.edu.hk

▪ School of Energy and Environment
http://www.cityu.edu.hk/see/master_ee.htm

▪ Programme information
https://www.cityu.edu.hk/pg/programme/p63
Application for Admission as Visiting Postgraduate Student

For prospective students who wish to try one or two selected course(s) before pursuing a full programme of study at the University. Please visit SGS website for details.

<table>
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<th>Type</th>
<th>Lectures, tutorials &amp; seminars</th>
<th>Coursework &amp; Exam (if applicable)</th>
<th>Type of Cert</th>
<th>Credit Units</th>
<th>Tuition Fees</th>
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<td>Regular Registration Mode</td>
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<td>Required</td>
<td>Cert of Completion</td>
<td>Earned^*</td>
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<tr>
<td>Auditing Mode</td>
<td>Required</td>
<td>NOT required</td>
<td>Cert of Attendance</td>
<td>NOT earned</td>
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^ Upon successful completion of the course and fulfilment of specific requirements set by the School.
* Credit transfer is possible but it should be limited to a maximum of 30% of the total credit units for the award being pursued and grades from the transferred credits obtained through visiting postgraduate studies may be counted in the calculation of a student's GPA.

Important Note:
Visiting students will only be admitted if the relevant School/Department is satisfied with their academic suitability for the course(s) applied for, and if there are places available on the course(s). Acceptance as a visiting student does not guarantee subsequent admission to a specific programme.