Master of Science (MSc) in Energy and Environment

理學碩士(能源及環境)

Programme Information

Dr. Chunhua LIU (劉春華博士), Programme Leader

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

~75% of energy comes from fossil fuel

Problems

Sustainability
Pollution
Climate change
Energy sustainability

Energy demand ↑, but supply ↓

Requires development of renewable energies
Effect of energy usage: pollution

CO₂

CH₄
Consequences on global temperature

**Multi-Model Averages and Assessed Ranges for Surface Warming**

- A2
- A1B
- B1
- Year 2000 Constant Concentrations
- 20th century

1°C increase in last century

Future predictions
Climate change
Climate change
Urgent Energy and Environment Issues

Energy generation and consumption

Environmental pollution and climate

An Inconvenient Truth!

School of Energy and Environment, City University of Hong Kong
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, ESG, etc.

The **first and only** academic programme in Hong Kong that focuses on both energy and environment.
Master of Science (MSc) in Energy and Environment

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

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

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 Pollution: Theories, Measurement and Mitigation
- Data Analysis in Environmental Applications
- Environmental and Energy Policy

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
- Gas Engineering – Theories and Practices
- 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

School of Energy and Environment, City University of Hong Kong
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
Course offering
For 2021/22

Energy

Core courses

SEE6101 Energy Generation and Storage Systems
SEE6102 Energy Efficiency and Conservation Technologies
SEE6115 Carbon Audit and Management
SEE6116 Building Performance Assessment
SEE6118 Emerging Energy Technologies
SEE6120 Gas Engineering – Theories and Practices
SEE6121 Gas Engineering – Practice and Management
SEE6122 Gas Engineering – Theories and Practices
SEE6129 Gas Engineering – Practice and Management

Elective courses

SEE6119 Experimental Techniques in Energy and Environment
SEE6201 Environmental and Energy Policy
SEE6202 Environmental and Energy Policy
SEE6206 Environmental and Energy Policy
SEE6207 Environmental and Energy Policy
SEE6208 Environmental and Energy Policy
SEE6209 Environmental and Energy Policy
SEE6210 Environmental and Energy Policy
SEE6211 Data Analysis in Environmental Applications
SEE6212 Environmental Pollution: Theories, Measurement and Mitigation
SEE6213 Environmental Pollution: Theories, Measurement and Mitigation
SEE6214 Solid Waste Treatment and Management
SEE6215 Solid Waste Treatment and Management
SEE6216 Solid Waste Treatment and Management
SEE6217 Solid Waste Treatment and Management
SEE6218 Solid Waste Treatment and Management
SEE6219 Solid Waste Treatment and Management
SEE6220 Solid Waste Treatment and Management
SEE6221 Solid Waste Treatment and Management
SEE6222 Solid Waste Treatment and Management
SEE6223 Solid Waste Treatment and Management
SEE6224 Solid Waste Treatment and Management
SEE6225 Solid Waste Treatment and Management
SEE6226 Ecosystem and Environmental Toxicology

Soft

SEE5211 Data Analysis in Environmental Applications
SEE5212 Environmental Pollution: Theories, Measurement and Mitigation
SEE5213 Data Analysis in Environmental Applications
SEE5214 Environmental Pollution: Theories, Measurement and Mitigation
SEE5215 Data Analysis in Environmental Applications
SEE5216 Environmental Pollution: Theories, Measurement and Mitigation
SEE5217 Data Analysis in Environmental Applications
SEE5218 Environmental Pollution: Theories, Measurement and Mitigation
SEE5219 Data Analysis in Environmental Applications
SEE5220 Environmental Pollution: Theories, Measurement and Mitigation
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SEE5248 Environmental Pollution: Theories, Measurement and Mitigation
SEE5249 Data Analysis in Environmental Applications
SEE5250 Environmental Pollution: Theories, Measurement and Mitigation
SEE5251 Data Analysis in Environmental Applications

Environment

SEE6999 Dissertation

School of Energy and Environment, City University of Hong Kong
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

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
Visit to Organic Farm
Number of MSc Graduates

No. of MSc students graduated

Year 2011: 5
Year 2012: 19
Year 2013: 43
Year 2014: 45
Year 2015: 46
Year 2016: 43
Year 2017: 50
Year 2018: 78
Year 2019: 53
Year 2020: 58
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

- Education: 15%
- Financial / Insurance: 3%
- Transport, Storage & Communications: 6%
- Engineering, Architectural & Technical Services: 9%
- Manufacturing: 6%
- Community, Social & Personal Services: 6%
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?

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>Environmental/sustainability managers and employees in manufacturing, construction, private sectors, etc.</td>
</tr>
<tr>
<td>Employees</td>
<td>Government, NGO officials</td>
</tr>
<tr>
<td>Officials</td>
<td>Educators</td>
</tr>
<tr>
<td>Teachers</td>
<td>Engineers from different fields interested in energy and environment</td>
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<tr>
<td>New graduates</td>
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</tbody>
</table>
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?

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

[Logos of various universities]
UGC Targeted Taught Postgraduate Programmes Fellowships Scheme 2022/23 for Local Students

- Fellowship awards are available for local students admitted to this programme under the Fellowships Scheme supported by the HKSAR Government. This programme in the priority area of “Sustainable City” is one of the targeted programmes listed under the Fellowships Scheme with 4 fellowship awards. Local students admitted to the programme in full-time, part-time or combined study mode will be invited to submit applications for the fellowships.

- For more information, please visit, https://www.cityu.edu.hk/pg/taught-postgraduate-programmes/fellowships-scheme
Application

- **To Apply**
  Please click the following link:
  Application will be closed by **31 March 2022** (non-local)
  by **31 May 2022** (local)

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

- **School of Energy and Environment**
  [https://www.cityu.edu.hk/see/programmes/master-science-energy-and-environment](https://www.cityu.edu.hk/see/programmes/master-science-energy-and-environment)

- **Programme information**
  [https://www.cityu.edu.hk/pg/programme/p63](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>
<thead>
<tr>
<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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regular Registration Mode</strong></td>
<td>Required</td>
<td>Required</td>
<td>Cert of Completion</td>
<td>Earned^*</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Auditing Mode</strong></td>
<td>Required</td>
<td>NOT required</td>
<td>Cert of Attendance</td>
<td>NOT earned</td>
<td>Yes</td>
</tr>
</tbody>
</table>

^ 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.
City University of Hong Kong

Ranked 53rd in the 2022 QS World University Rankings
Ranked 4th in the world's top 50 universities under 50 years of age
Ranked 89th in the 2022 QS Graduate Employability Rankings

• Combined Chinese-Western cultures
• English-speaking environment
• International metropolis
• Excellent academic standards
• Close to home
• 1 year master programme
• 4 year PhD programme

For more information:
http://www.cityu.edu.hk/see

Email: see.enquiry@cityu.edu.hk
Q & A

Contact
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