

## PROGRAMME SPECIFICATION – POSTGRADUATE PROGRAMMES

### KEY FACTS

|                          |   |
|--------------------------|---|
| Programme name           | Energy and Environmental Technology and Economics |
| Award                    | MSc   |
| School                   | School of Science & Technology                    |
| Department or equivalent | Engineering                                       |
| Programme code           | PSEETE  |
| Type of study            | Full Time    Part Time                            |
| Total UK credits         | 180   |
| Total ECTS               | 90  |

### PROGRAMME SUMMARY

As the UK firms up on its post-Kyoto commitments, with developments such as the Climate Change Levy and Emissions Trading, it is becoming clear that a new underpinning momentum for energy and environmental management is emerging. This momentum requires a new mix of skills, encompassing the more traditional technologies but aligned to the financial, economic and regulatory issues that now play such an important part in the life of those responsible for the purchase and management of energy and for interfacing with the environment.

The programme is focused towards individuals and industries concerned with investment in energy and environmental technologies and services, the management of energy resources, conversion and use, or related research and development. It aims to provide a technical and economic framework within which the participants may develop the skills required by a successful industrial economy. The framework will include an examination of EU and UK government policies, commensurate strategies and their implications relative to global activities and the international market in energy resources

#### Aims

The programme thus aims to provide those concerned with the cost-effective management of energy resources, environmental conservation and the development of new and renewable technologies the tools and expertise that will be required as the world moves towards a sustainable future. The focus of the programme is on policy issues and taking the high-level decisions necessary to maintain the aims of an organisation while satisfying the increasing demands of public and Government for high standards. Senior speakers from industry help promote the necessary level of thinking.

There is one award offered by the programme, and two other possible outcomes (please see the section “What Award Can I Get?”).

### **MSc in Energy, Environmental Technology and Economics**

For all of you completing the MSc in Energy, Environmental Technology and Economics, you will have demonstrated original application of knowledge in the area through research skills, and through the analysis, design, critical evaluation and extension of knowledge in the area through a dissertation based on a detailed investigation or research into a subject on energy supply and/or demand, with your own analysis and conclusions as to the way forward. This MSc will be achieved through your individual dissertation, a substantial module component worth 60 credits that you can commence once you have successfully passed all your taught modules and exams.

### **Postgraduate Diploma in Energy, Environmental Technology and Economics**

For all of you completing the Postgraduate Diploma, in addition to the above you will be able to demonstrate knowledge and use appropriate methods to solve problems from your specific programme variant. You will also be able to show a competence across the range of decision making methodologies, and adapt existing methods appropriately to problems that do not properly fit into the standard frameworks.

### **Postgraduate Certificate in Energy, Environmental Technology and Economics**

You will be able to review a topic by researching available data and information, verifying its validity and relevance to the question in hand. Once relevant data is available you will assess it and analyse the implications relevant to your review. Where some data is not available, you will use your best judgement to address the matters in hand. Once all relevant information is to hand, you will carry out the appropriate analysis appropriate to the task in hand and draw and present logical conclusions and recommendations.

## **WHAT WILL I BE EXPECTED TO ACHIEVE?**

**On successful completion of this programme, you will be expected to be able to:**

### Knowledge and understanding:

- Explain the technologies for energy production: fossil fuels, nuclear, renewable
- Assess the economic factors affecting energy production and supply
- Know the economics governing consumer use and purchase of energy
- Evaluate the environmental effects of energy and other industrial production
- Understand the technologies for reducing environmental impact and their economics

### Skills:

- Rapidly assess the most important features of a new technology
- Integrate information across a broad range of subject areas, from engineering through economics to risk assessment
- Seek, process and interpret information from a variety of sources

- Relate to professionals from a wide variety of backgrounds, academic, commercial and industrial, from professors in engineering and mathematics through consulting engineers to senior managers and directors of large, publicly quoted companies
- Value technological benefit against a financial cost
- Analyse information and technical problems critically
- Construct a closely reasoned case drawing on a multiplicity of sources of evidence
- Devise a solution to a given problem
- Assess arguments critically
- Propose a rational argument to defend the solution
- Write a technical report
- Devise and test strategies
- Present and defend a case verbally.

#### Values and attitudes:

- Recognise the need to manage the Earth's resources carefully to meet the human energy needs sustainably
- Care for the environment as a sustainable system
- Desire to improve the condition of the human population through technological innovation and optimal management of technology
- Demonstrate a rational, professional approach to problem solving, characteristic of professional engineers.

This programme has been developed in accordance with the QAA Subject Benchmark for generic masters level programmes.

### **HOW WILL I LEARN?**

Each module is taught over four days from Monday to Thursday, with the last day including group activities to ensure that understanding of the module has been achieved

The teaching and learning strategy is based on lectures and group activities. Assessment for the taught elements of the programme is based on coursework and written examinations.

A feature of the programme is that many lecturers from industry and commerce come in to lecture you. A further feature is the fact that typically 50% of the students work full-time in various parts of the energy industry. This brings the benefit of information exchange based on real experience, which enhances the learning process.

### **WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?**

#### Assessment and Assessment Criteria

## Coursework and written examination

Assessment Criteria are descriptions, based on the intended learning outcomes, of the skills, knowledge or attitudes that you need to demonstrate in order to complete an assessment successfully, providing a mechanism by which the quality of an assessment can be measured. Grade-Related Criteria are descriptions of the level of skills, knowledge or attributes that you need to demonstrate in order to achieve a certain grade or mark in an assessment, providing a mechanism by which the quality of an assessment can be measured and placed within the overall set of marks. Assessment Criteria and Grade-Related Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, module specifications, on the virtual learning environment or attached to a specific assessment task.

## Feedback on assessment

Feedback will be provided in line with our Assessment and Feedback Policy. In particular, you will normally be provided with feedback within three weeks of the submission deadline or assessment date. This would normally include a provisional grade or mark. For end of module examinations or an equivalent significant task (e.g. an end of module project), feedback will normally be provided within four weeks. The timescale for feedback on final year projects or dissertations may be longer. The full policy can be found at:

[https://www.city.ac.uk/\\_data/assets/pdf\\_file/0009/365292/Assessment-and-Feedback-Policy-Senate-October-2016-2.pdf](https://www.city.ac.uk/_data/assets/pdf_file/0009/365292/Assessment-and-Feedback-Policy-Senate-October-2016-2.pdf)

## Assessment Regulations

In order to pass your Programme, you should complete successfully or be exempted from the relevant modules and assessments and will therefore acquire the required number of credits.

The pass mark for each module is 50%. If a module is assessed by coursework and examination, the pass mark for each assessment component is 50%.

If you fail an assessment component or a module, the following will apply:

1. Compensation: where you fail up to a total of 20 credits at first or resit attempt, you may be allowed compensation if:
  - Compensation is permitted for the module involved (see the What will I Study section of the programme specification), and
  - It can be demonstrated that you have satisfied all the Learning Outcomes of the modules in the Programme, and
  - A minimum overall mark of no more than 10% below the module pass mark has been achieved in the module to be compensated, and
  - An aggregate mark of 50% has been achieved for the Programme Stage.

Where you are eligible for compensation at the first attempt, this will be applied in the first instance rather than offering a resit opportunity.

If you receive a compensated pass in a module you will be awarded the credit for that module. The original component marks will be retained in the record of marks and your original module mark will be used for the purpose of your Award calculation.

2. Resit: Where you are not eligible for compensation at the first attempt, you will be offered one resit attempt.

If you are successful in the resit, you will be awarded the credit for that module. The mark for each assessment component that is subject to a resit will be capped at the pass for the module. This capped mark will be used in the calculation of the final module mark together with the original marks for the components that you passed at first attempt.

If you do not meet the pass requirements for a module and do not complete your resit by the date specified you will not progress and the Assessment Board will require that you be withdrawn from the Programme.

If you fail to meet the requirements for the Programme, the Assessment Board will consider whether you are eligible for an Exit Award, as per the table below.

If you would like to know more about the way in which assessment works at City, please see the full version of the Assessment Regulations at:

[http://www.city.ac.uk/\\_data/assets/word\\_doc/0003/69249/s19.doc](http://www.city.ac.uk/_data/assets/word_doc/0003/69249/s19.doc)

## WHAT AWARD CAN I GET?

### Master's Degree:

| Part         | HE Level | Credits | Weighting (%) |
|--------------|----------|---------|---------------|
| Taught       | 7        | 120     | 67            |
| Dissertation | 7        | 60      | 33            |

| Class                  | % required |
|------------------------|------------|
| With Distinction       | 70         |
| With Merit             | 60         |
| Without classification | 50         |

### Postgraduate Diploma:

| Part   | HE Level | Credits | Weighting (%) |
|--------|----------|---------|---------------|
| Taught | 7        | 120     | 100           |

| Class                  | % required |
|------------------------|------------|
| With Distinction       | 70         |
| With Merit             | 60         |
| Without classification | 50         |

### Postgraduate Certificate:

| Part | HE Level | Credits | Weighting (%) |
|------|----------|---------|---------------|
|------|----------|---------|---------------|

| Class | % required |
|-------|------------|
|-------|------------|

|        |   |    |     |                        |    |
|--------|---|----|-----|------------------------|----|
| Taught | 7 | 60 | 100 | With Distinction       | 70 |
|        |   |    |     | With Merit             | 60 |
|        |   |    |     | Without classification | 50 |

## WHAT WILL I STUDY?

The programme consists of 3 core modules and 5 elective modules, plus the dissertation. You are normally required to complete all the taught modules successfully before progressing to the dissertation. All students should complete 120 credits of taught modules, plus a 60 credit dissertation module. There is a general introductory one-day workshop at the start of the course on the broad area of energy and the environmental issues. It will set the scene for the modules to follow in this programme. It also provides general information about health and safety in industry.

Students pursuing further learning for **Chartered Engineer** accreditation must take:

1. EPM403: 'Risk Management' as one of their electives;
2. EPM799: 'EETE MSc Major Project (Further Learning for CEng)'.

All other students may take either dissertation module.

Students pursuing further learning for **Chartered Energy Manager** accreditation must take:

1. EPM403: 'Risk Management' as one of their electives.

| Module Title                                       | SITS Code | Module Credits | Core/ Elective | Can be Compensated? | Level |
|--|-----------|----------------|----------------|---------------------|-------|
| Energy Policies and Economic Dimensions            | EPM722    | 15             | C              | Y                   | 7     |
| The Energy Market and Energy Trading               | EPM723    | 15             | C              | Y                   | 7     |
| Corporate Energy Management                        | EPM724    | 15             | E              | Y                   | 7     |
| Energy Economics and Finance                       | EPM991    | 15             | E              | Y                   | 7     |
| Energy in Industry and the Built Environment       | EPM727    | 15             | E              | Y                   | 7     |
| Renewable Energy and Sustainability                | EPM730    | 15             | C              | Y                   | 7     |
| Risk Management                                    | EPM403    | 15             | E              | Y                   | 7     |
| Transport Energy and Emissions                     | EPM738    | 15             | E              | Y                   | 7     |
| Distributed power generation and smart grids       | EPM993    | 15             | E              | Y                   | 7     |
| Oil and Gas Industries for Sustainable Development | EPM999    | 15             | E              | Y                   | 7     |
| EETE MSc Major Project                             | EPM930    | 60             | E*             | N                   | 7     |
| EETE MSc Major Project (Further Learning for CEng) | EPM799    | 60             | E*             | N                   | 7     |

\*see note above regarding dissertation project selection

### TO WHAT KIND OF CAREER MIGHT I GO ON?

The Energy story is now part of the day-to-day debate. Climate change drives the international agenda. In the UK, there are additional energy supply issues, through the decline of existing nuclear capacity, growing imports of fossil fuels and challenging medium term targets for renewables and low carbon supply.

To meet these challenges, there is a need for skilled practitioners across a range of disciplines which can be met by your qualification from this MSc. These include:

- Technical and engineering expertise for new nuclear, renewables and clean coal supplies, along with other technologies such as fuel cells
- Economic and market based skills to run the new world of carbon trading
- Policy related expertise in both energy and environmental issues
- Technical, engineering and change management skills to deliver demand reduction targets. These skills can be divided as follows:
  - Scoping and / or delivery of technical / managerial solutions for energy users and government programmes
  - Scoping and / or delivery of change management and people based solutions for the same groups
  - Provision of financial and economic solutions to the incorporation of energy and carbon management into business and public sector financial accounting

Views from the energy industry suggest that there will be increasing demand across all these skills into the foreseeable future.

If you would like more information on the Careers support available at City, please go to: <http://www.city.ac.uk/careers/for-students-and-recent-graduates>.

### WHAT STUDY ABROAD OPTIONS ARE AVAILABLE?

From time to time opportunities could arise for study abroad. Such opportunities are usually through Erasmus programmes and you would be encouraged to apply.

### WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?

The School Professional Liaison Unit provides support to prepare CVs, interviews and application for internships.

### WILL I GET ANY PROFESSIONAL RECOGNITION?

**Accrediting Body:** Energy Institute

**Nature of Accreditation:** All students qualify for MEI status (Member of the Energy Institute). The programme is considered as Further learning for Chartered Engineer and Chartered Energy Manager accreditation if students undertake the requirements listed in the section 'What Will I Study?'

### **HOW DO I ENTER THE PROGRAMME?**

A minimum of Lower Second class Degree, or equivalent, in an Engineering, Scientific or Mathematical discipline will normally be required. Industrial experience relevant to the board subject on this MSc will be also considered in addition to your academic qualifications.

For those overseas applicants, whose first language is not English or their country has not been exempted from the English language requirement by the UK Home Office, they will need to provide one of the following English test qualifications:

IELTS: 6.5 OR

TOEFL 92

Version: 10.0

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