

**MSc in Renewable Energy: Technology and Sustainability (full-time)  
For students entering in 2013/4**

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	
Faculty:	Science Faculty
Programme length:	1 year
Date of specification:	16/Aug/2013
Programme Director:	Dr Maria Vahdati
Programme Advisor:	
Board of Studies:	MSc in Construction Management
Accreditation:	

**Summary of programme aims**

The programme aims to impart:

- Understanding of, and the ability to engage in informed debate concerning, the role of energy in the modern world, the resulting environmental and societal impacts (including the evidence for and against climate change) and alternative means of energy provision that seek to minimise any negative impacts
- Analytic, and limited practical skills, for the assessment, selection and deployment of renewable energy technologies in the field, with an emphasis on Wind, Hydro, Solar and Biomass
- Analytic skills appropriate for the outline assessment of conventional energy technologies
- Sufficient experience of conducting and reporting independent research as is necessary for more able candidates to proceed to doctoral studies
- Confidence in interacting with the key players in the new, and traditional, energy supply technologies within the UK, Europe and elsewhere
- Understanding of energy efficiency technologies with a particular emphasis on their use within the built environment.

The programme also aims to:

- Develop students' skills in such a way that they are able to make rational decisions about energy supply options based on quantitative arguments
- Introduce students to the wider context in which 'real world' decisions must be made, by demonstrating, through example, that technical analysis alone cannot be relied upon to produce positive outcomes
- Develop students' mental agility and flexibility with multi-disciplinary problems, such that they are able to recognise the key drivers influencing any energy-related decision, and bring to bear appropriate analytic skills such that optimal outcomes are achieved, drawing on personal development and research where necessary.

**Transferable skills**

Many transferable skills are covered, distributed over the portfolio of modules. These include: report writing, use of software and computer simulation to conduct feasibility studies, use of the traditional and new media for research, team working skills.

**Programme content**

**Compulsory Modules**

CEMREC1	Energy Carbon and the Environment	10	7
CEMRHP4	Sustainable Heat and Power	40	7
CEMRMR	Mini-project and Research Methods	10	7
CEMREB1	Energy in Buildings - part one	10	7
CEMRUS	Sustainable Urban Systems	10	7
CEMRC1	Carbon Management 1	10	7
CEMRCA	Carbon Management and Analysis	10	7
CEMRPM	Project Management for Engineering and Construction	10	7
CEMRP	MSc Research Project, Seminar and Dissertation	60	7
<b>Total Compulsory Modules</b>		<b>170</b>	

**Elective modules**

<i>Code</i>	<i>Module title</i>	<i>Credits</i>	<i>Level</i>
CEMREB3	Energy in Buildings - part two	10	7
CEMDICTEM	ICT and Energy Management	10	7

### **Part-time or modular arrangements**

The MSc is offered over 12 months on a full-time basis and over 24 months on a part-time basis; the PGDip is offered over 8 months full-time; the PGCert is offered over 8 months part-time. Individual modules can be taken as a short course on an ad-hoc basis.

### **Progression requirements**

Candidates will not be permitted to attempt more than 70 credits in any single term. Progress will be reviewed before the start of the Summer term, to ensure that candidates have a reasonable prospect of amassing sufficient taught credits to pass. Candidates with a deficit of more than 70 taught credits at the start of the Summer term will not be permitted to proceed. Candidates must complete at least 120 taught credits of the course in order to proceed to the research project. PGDip candidates who perform sufficiently well over the taught modules may be offered the opportunity to register for the MSc.

### **Summary of Teaching and Assessment**

Modules will be delivered mainly in a block format, relying primarily on lectures, seminars, and assessment comprising course work and class test/examinations. Module CEMRHP4 (40 credits) will include a limited amount of practical work. Several modules will make extensive use of computer simulation techniques.

Work will be assessed on a University-wide conventional scale, as follows:

#### **Passing categories:**

70 – 100 Work of distinction standard

60 – 69 Work of merit standard

50-59 Work of good standard

#### **Failing categories:**

40 – 49 Work below threshold standard

0 – 39 Unsatisfactory Work

The standard University masters classification system, will be employed as follows:

#### **For Masters Degrees (180 Credits required)**

To obtain the Masters award a student must take 180 credits consisting of 170 credits of compulsory modules and one 10 credit elective module.

To pass the MSc students must gain a weighted average mark of 50 or more over **180** credits including a mark of 50 or more for the project/dissertation module CEMRP. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and of all modules marked below 50 must not exceed 55 credits.

To qualify for Merit students must, gain an overall average of 60 or more over **180** credits and a mark of 50 or more for the project/dissertation module CEMRP, and not have any mark below 40.

To qualify for Distinction students must, gain an overall average of 70 or more over **180** credits and a mark of 60 or more for the project/dissertation module CEMRP, and not have any mark below 40.

#### **For PG Diplomas (120 Credits required)**

To obtain the Diploma award a student must take 120 credits consisting of 110 credits of compulsory modules (not including the dissertation module) and one 10 credit elective module.

To pass the Postgraduate Diploma students must gain an overall average of 50 or more over 120 credits (not including the dissertation module). In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

To qualify for Merit students must gain an overall average of 60 or more over 120 credits, and not have any mark below 40.

To qualify for Distinction students must gain an overall average of 70 or more over 120 credits, and not have any mark below 40.

**For PG Certificate (60 Credits required)** To obtain the Certificate award a student must take 60 credits of modules from the compulsory or elective modules list but not including the dissertation module.

To pass the Postgraduate Certificate students must gain an overall average of 50 or more over 60 credits (not including the dissertation module). In addition the total credit value of all modules marked below 40 must not exceed 10 credits.

Further information on the classification conventions, including borderline criteria, are available at <http://www.reading.ac.uk/web/FILES/exams/PGclassification-post-2008.pdf>

### **Admission requirements**

Entrants will normally be required to have achieved a degree in a numerate, technical subject at the equivalent of a UK 2.2 honours or better. Any substantial prior experience in the field will be taken into account to ameliorate any deficiencies in the academic qualifications of an exceptionally able applicant.

**Admissions Tutor:** Dr Maria Vahdati [m.m.vahdati@reading.ac.uk](mailto:m.m.vahdati@reading.ac.uk)

### **Support for students and their learning**

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, the Careers, Placement and Experience Centre (CPEC), In-session English Support Programme, the Study Advice and Mathematics Support Centre teams, IT Services and the Student Access to Independent Learning (S@il) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and advisers in the Student Services Centre. The Student Services Centre is housed in the Carrington Building and offers advice on accommodation, careers, disability, finance, and wellbeing, academic issues (eg problems with module selection) and exam related queries. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions and runs workshops and seminars on a range of topics. For more information see [www.reading.ac.uk/student](http://www.reading.ac.uk/student)

Additional school level support will be provided through:

A personal tutor;

The programme director;

A detailed programme handbook;

Activities designed to break down barriers and encourage appropriate social interactions between students, and for that matter, staff.

### **Career prospects**

There are excellent employment prospects. Energy is high on the political and research agenda, and the programme is designed to produce graduates able to participate in the entire range of activities that support that agenda, be they located in the industrial, consultancy, public or private sectors.

### **Opportunities for study abroad or for placements**

There is no formal provision for study abroad within the programme. However candidates are encouraged to undertake research projects with external collaborators, who may be located outside the UK.

### **Programme Outcomes**

#### **Knowledge and Understanding**

##### **A. Knowledge and understanding of:**

1. The role of energy in the modern world, including the resulting environmental and societal impacts
2. Technical and other means of minimising the negative environmental and societal impacts of energy use
3. 'Practical' skills in the deployment of low impact energy systems
4. Deeper understanding of aspects of the above

##### **Teaching/learning methods and strategies**

Modules CEMREC1, CEMRUS, CEMRC1, CEMRCA  
Modules CEMRHP4, CEMREB1, CEMREB3, CEMDICTEM, CEMRUS, CEMRC1, CEMRCA  
Modules CEMRHP4, CEMREB1, CEMREB3, CEMDICTEM, CEMRPM

##### *Assessment*

Distributed across all cited modules:

- Individual Assignments
- Group assignments
- Examinations

#### **Skills and other attributes**

##### **B. Intellectual skills - *able to:***

##### **Teaching/learning methods and strategies**

1. Identify the key theoretical issues underlying real, multidisciplinary problems (particularly in energy)
2. Present an argument using data derived from research or literature
3. Present an argument using quantitative reasoning, supported by other analytic reasoning where appropriate

- Case studies in lecture courses, and assessments based on real problems
- Module CEMRMR, and Research Project
- Quantitative reasoning in context is intrinsic to all core modules

#### *Assessment*

- Assignments & Examinations in modules CEMREC1, CEMRHP4, CEMREB1, CEMREB3, CEMDICTEM, CEMRUS, CEMRPM, CEMRMR
- Assignments in modules CEMREC1, CEMRC1, CEMRCA, CEMRMR
- Write ups and seminars for mini-project and research project

### **C. Practical skills - able to:**

1. Design and perform laboratory experiments
2. Use computers for research, analysis and presentation
3. Manage projects in the field

### **Teaching/learning methods and strategies**

1. Laboratory experiments in CEMRHP4
2. Integral to all core modules, training provided as part of CEMRMR
3. Module CEMRPM and field trips in other modules

#### *Assessment*

- Laboratory write-ups
- Essential for completion of many assignments
- Assignment in CEMRPM, also completion of field work

### **D. Transferable skills - able to:**

1. Write formal reports
2. Give seminars
3. Design and use spreadsheets for modelling
4. Use commercial software
5. Obtain information from conventional and new media
6. Undertake research
7. Work in groups

### **Teaching/learning methods and strategies**

1. Module CEMRMR
2. Module CEMRMR
3. Instruction distributed across all core modules
4. Commercial software used in CEMRHP4, CEMREB3, CEMDICTEM
5. Module CEMRMR, and other core modules
6. Module CEMRMR, and in preparation of assignments for other modules
7. Group work intrinsic to CEMREB3 and CEMRHP4, particularly practicals

#### *Assessment*

- Final assignment for CEMRMR, and other coursework reports. Research project
- Seminar in module CEMRMR, and in other modules
- Spreadsheets developed during CEMRHP4, CEMRC1 and CEMRCA
- Assignments in some core modules are based around commercial software
- Integral part of almost all coursework
- CEMRMR and Research Project outputs
- Practical write-ups in CEMRHP4

**Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.**