PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	Master of Science Postgraduate Diploma Postgraduate Certificate
4	**Programme Title**	Renewable Energy Enterprise and Management
5	**UCAS/Programme Code**	5160 F/P 3419 F/P 3045 F/P
6	**Programme Accreditation**	
7	**QAA Subject Benchmark(s)**	
8	**FHEQ Level**	7
9	**Date written/revised**	Feb 2010

10 Programme Aims

1. To give students from a range of backgrounds, including non-scientists and technologists, a common level of knowledge and understanding of renewable energy resources and technology.
2. To enable these students to gain knowledge and understanding of business principles and practice and the role of enterprise in the renewable energy industry.
3. To enable students to gain knowledge and understanding of the environmental impact of renewable energy exploitation.
4. To enable students to understand the social, political and economic climate in which renewable energy must work.
5. To produce high quality graduates who will play a key role in planning and managing the future development and direction of the renewable energy industry.
6. To provide a programme consistent with Level 7 of the FHEQ.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas.

Knowledge and Understanding

On completing the programme students should be able to:

A1 Demonstrate knowledge and understanding of current worldwide energy usage and its impact on climate.

A2 Demonstrate a comprehensive knowledge and understanding of the storage / conversion and integration of renewable energy sources (solar, wind, hydro, wave, tidal, bioenergy) into existing systems.

A3 Demonstrate a comprehensive knowledge and understanding of a number of key non technical issues including policy, economics, system modelling, environmental issues and energy management as well as the scientific basis that drives innovation in response to environmental regulation). For PG Diploma and Certificate students this will be more limited in scope than for MSc students, dependent on module choices.

A4 Demonstrate a knowledge of the structure, principles & practice of the EIA process PG Diploma and Certificate students may opt to take this module SPG8013, Environmental Impact Assessment.

A5 Identify relationships between research, enterprise & entrepreneurship and understand the entrepreneurial business environment.

A6 Evaluate IPR & other legislation relevant to the management of innovation & technology.

A7 Identify & research the viability of a business idea.

Teaching and Learning Methods

Knowledge and understanding of A1 – A7 is generally taught via formal lectures, distance learning/self guided material and case studies, supplemented by seminars and tutorials. Students are encouraged to develop their knowledge and understanding by independent reading, for which they are given guidance in the distance learning/self guided material, use of the internet and by discussing the subjects with their industry based colleagues and/or other students as well as teaching staff. The use of exercises during the intensive schools, assessments after the intensive school, and the consultancy project also enable the student to learn and apply their knowledge to their area of personal interest.

Assessment Strategy

Each taught module has its own particular assessment strategy. However, in general, knowledge and understanding are assessed by coursework and written examination. Coursework includes exercises, essays on relevant subject matter; the presentation and development of business plans. An In-session report tests factual knowledge of EIA process & procedures, and assesses problem-solving, information synthesis and evaluation via review and report forms. A substantial consultancy project allows in-depth assessment of knowledge and understanding in a renewable energy area of the student's choice.

Intellectual Skills

On completing the programme students should be able to:
B1 Formulate or recognise key hypotheses, to test hypotheses using logical and consistent quantitative or qualitative arguments, and to identify key data which allow such tests to be made.
B2 Critically assess the value and limitations of new data in relation to existing information on a given subject, to draw logical conclusions, and to identify appropriate avenues for further study.
B3 Solve problems relevant to commercial needs using a combination of technical and business tests and procedures.
B4 Critically appraise an innovative idea within a business context, discriminating those ideas which justify further development from those less likely to succeed
B5 Critically assess the quality of data relating to business performance and activity.
B6 Recognise the potential value of intellectual property that arises as a consequence of innovation, and take appropriate steps to protect it.
B7 Present and summarise such data, and to critically appraise its significance, using appropriate statistical techniques.

Teaching and Learning Methods

Intellectual skills B1-7 are generally taught via formal lectures, distance learning/self guided material and case studies, supplemented by seminars and tutorials. Students are encouraged to develop their skills through exercises, by independent reading, for which they are given guidance in the distance learning/self guided material, use of the internet and discussing the subjects with their industry based colleagues and/or other students as well as teaching staff. Students also practise these abilities while carrying out the consultancy project, learning to apply their skills to their area of personal interest.

Assessment Strategy

Acquisition of intellectual skills is usually assessed through coursework and written examination. Coursework includes exercises, essays on relevant subject matter; the presentation and development of business plans.

Practical Skills

On completing the programme students should be able to:
C1 Analyse the energy capture potential for solar, wind & hydro resources.
C2 Demonstrate the ability to critically assess the quality of scientific & engineering data.
C3 Demonstrate the ability to interpret, present and summarise such data, and to critically

appraise its significance, using appropriate statistical techniques within the context of scientific / engineering innovation.
C4 Design, plan and execute an extended project or pilot study involving, where appropriate, a literature review, problem or idea specification, design, implementation and analysis, and the development of a business plan. (MSc & PG Dip only).
C5 Develop links and relations with individuals, businesses and agencies that can provide support and advice in the area of knowledge transfer and new venture creation.
C6 Develop behaviours and actions that are consistent with entrepreneurial activity.
C7 Demonstrate the ability to devise, organise and operate a team-based micro-business over the period of the programme.(For Cert & PG Dip, this is dependent on module selection.)
C8 Understand the importance of Health and Safety and the roles and responsibilities of a professional in the context of legislation and best practice.
C9 Demonstrate the ability to manage time.
C10 Demonstrate the ability to review and report on the work of peers and colleagues.

Teaching and Learning Methods

Practical Skills C1-10 are generally taught and practised via group activities, formal lectures, distance learning/self guided material and case studies, supplemented by seminars and tutorials. Students are encouraged to develop their skills by exercises, reflection and review, independent reading, for which they are given guidance in the distance learning/self guided material, use of the internet and discussing the subjects with their industry based colleagues and/or other students as well as teaching staff.

In carrying out the consultancy project and post-school assignments, students practise and apply these skills to their area of personal interest.

Assessment Strategy

Each taught module has its particular assessment strategy. However, practical skills are usually assessed via coursework. A variety of approaches is used, including exercises, essays on relevant subject matter; the presentation and development of business plans, and written examination. Skill C9 is not directly assessed, though has to be demonstrated in order for the students to meet their deadlines and manage studying several subjects simultaneously. Skills C4 & C10 will be assessed in the consultancy project.

Transferable/Key Skills

On completing the programme students will be able to:-

D1 Communicate by means of well prepared, clear and confident business-focussed presentations and concise and grammatical written documents.

D2 Use library and other information sources skilfully and appropriately.

D3 Use IT resources skilfully and appropriately.

D4 Plan, organise and prioritise work activities in order to meet deadlines.

D5 Work independently, with initiative, and also in teams.

D6 To solve problems.

Teaching and Learning Methods

Transferable/Key skills D1-6 are generally demonstrated, taught and practised throughout the programme via formal lectures, distance learning/self guided material and case studies, supplemented by group activities, seminars and tutorials. The structure of REEM, with its distance learning /intensive school format, requires students to be able to demonstrate D2, 3, 4 & 5.
Students are encouraged to develop their skills by exercises, reflection and review, independent reading, for which they are given guidance in the distance learning/self guided material, use of the internet and discussing the subjects with their industry based colleagues and/or other students as well as teaching staff.

In carrying out the consultancy project and assignments, students demonstrate all these skills.

Assessment Strategy

Skills D2, 3 4&5 are not directly assessed, though students need to demonstrate these abilities while carrying out assessed work throughout the programme.
Coursework includes exercises, essays on relevant subject matter; the presentation and development of business plans. An In-session report tests factual knowledge of the EIA process & procedures, and assesses problem-solving, information synthesis and evaluation via review and report forms.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

REEM will be delivered by a combination of distance learning and one-week intensive schools. The programme will be run as a modular programme. Students may complete the programme in either full or part time mode.

Master of Science 180 credits

The minimum duration for the MSc is one year, and the maximum is 5 years. All modules are compulsory for the MSc, together with an 80 credit project:

MST8010 Project Management: 10 credits
SPG8009 Renewable Energy Policy, Politics & Ethics: 10 credits
SPG8012 Energy Management: 10 credits
SPG8013 Environmental Impact Assessment: 10 credits
SPG8014 Introduction to Hydro, Wind, Wave & Tidal Energy: 10 credits
SPG8015 Enterprise & Entrepreneurship: 20 credits
SPG8016 Business Enterprise: 20 credits
SPG8017 Introduction to Bioenergy and Photovoltaics: 10 credits
SPG8097 Enterprise Project: 80 credits

10 credits equates to 100 hours study time.

Postgraduate Diploma 120 credits

The minimum duration of the Diploma is 9 months and the maximum duration is 5 years.

Candidates shall take the following compulsory modules:
SPG8098 Enterprise Project (Diploma): 40 credits
SPG8015 Enterprise & Entrepreneurship: 20 credits
SPG8014 Introduction to Hydro,Wind, Wave & Tidal Energy: 10 credits
SPG8017 Introduction to Bioenergy and Photovoltaics: 10 credits

Candidates shall also take 40 credits from the list below:

SPG8016 Business Enterprise: 20 credits
SPG8012 Energy Management: 10 credits
SPG8009 Renewable Energy Policy, Politics & Ethics: 10 credits
SPG8013 Environmental Impact Assessment: 10 credits
MST8010Project Management: 10 credits

Postgraduate Certificate 60 credits

The minimum duration for the PG Certificate is 6 months and the maximum duration is 3 years. Candidates shall normally take the following compulsory modules:

SPG8015 Enterprise & Entrepreneurship: 20 credits
SPG8014 Introduction to Hydro,Wind, Wave & Tidal Energy: 10 credits
SPG8017 ntroduction to Bioenergy and Photovoltaics: 10 credits

Candidates shall also select 20 credits from the list below:

SPG8016 Business Enterprise: 20 credits
SPG8012 Energy Management: 10 credits
SPG8009 Renewable Energy Policy, Politics & Ethics: 10 credits
SPG8013 Environmental Impact Assessment: 10 credits
MST 8010 Project Management: 10 credits

Key features of the programme (including what makes the programme distinctive)

1. It is specifically designed and developed to meet the needs of the renewable energy industry which is supported by the Government and EU policies

2. It has been developed to meet the demand from prospective students who have a less technical background than those on the current Renewable Energy programme. Such students typically have good first degrees in Geography, Environmental Management etc.

3. It is available in both full-time and part time mode thereby offering maximum flexibility to students, including those who are in work.

4. Modules are designed to be delivered by both distance learning and intensive schools.

5. It includes specialist expertise from both Newcastle and Northumbria Universities.

Programme regulations (link to on-line version)

http://www.ncl.ac.uk/regulations/

13 Criteria for admission

Entry qualifications

A minimum of a Bachelors Degree with Honours 2:ii (or equivalent.)
The necessary background is likely to be provided by first degrees in any of the following: geography; planning; surveying; business; economics; social policy; politics; product design; industrial management; environmental management; physical or earth-sciences (this list is not exclusive).

- Students will need to be numerate and be prepared to use quantitative methods appropriate to economic and planning analyses but no specific specialist mathematical background is necessary.
- Students will need to be prepared for study of business, enterprise and entrepreneurship but no specific specialist business specialist background is necessary.
- Students will be expected to engage with the technological as well as other socio-political and economic constraints on the exploitation of renewable energy but no specialist scientific or engineering or technological background is necessary (students with an engineering background should also consider the alternative Reflex MSc programme).

Admissions policy/selection tools

All applicants will be considered based on their academic qualifications and their relevant technical industrial experience.

Non-standard Entry Requirements

Applicants who do not meet the standard entry requirement will be asked to submit a CV detailing qualifications and experience. This will be reviewed by the DPD on a case by case basis. Those not meeting entry standard levels may be advised on how the appropriate standard can be achieved. The candidate will be informed of the outcome in writing.

Additional Requirements

None

Level of English Language capability

IELTS Level 6.5
TOEFL 575;
Internet based TOEFL 90

14 Support for Student Learning

Induction
During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principle support services and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students will be given detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc. The International Office offers an additional induction programme for overseas students.

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification. Some of this material, e.g. time management is covered in the appropriate Induction Programme. Students are explicitly tutored on their approach to both group and individual projects.

Numeracy support is available through Maths Aid.

Help with academic writing is available from the Writing Centre.

Academic support
The initial point of contact for a student is with a lecturer or module leader, or their tutor (see below) for more generic issues. Thereafter the Degree Programme Director or SAgE Faculty Provost may be consulted. Issues relating to the programme may be raised at the Staff-Student Forum, and/or at the Board of Studies.

Pastoral support
All students are assigned a personal tutor whose responsibility is to monitor the academic performance and overall well-being of their tutees. In addition the University offers a range of support services, including one-to-one counselling and guidance or group sessions/workshops on a range of topics, such as emotional issues eg. stress and anxiety, student finance and budgeting, disability matters etc. There is specialist support available for students with dyslexia and mental health issues. Furthermore, the Union Society operates a Student Advice Centre, which can provide advocacy and support to students on a range of topics including housing, debt, legal issues etc.

Support for students with disabilities
The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies.

Learning resources
The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities.

All new students whose first language is not English are required to take an English

Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-sessional language training can be provided. The INTO Newcastle University Centre houses a range of resources which may be particularly appropriate for those interested in an Erasmus exchange.

15 Methods for evaluating and improving the quality and standards of teaching and learning

Module reviews
All modules are subject to review by questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new modules are considered at the Board of Studies. Student opinion is sought at the Staff-Student Forum and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Teaching and Learning Committee.

Programme reviews
The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Teaching and Learning Committee.

External Examiner reports
External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Teaching and Learning Committee. External Examiner reports are shared with institutional student representatives, through the Board of Studies..

Student evaluations
All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Staff-Student Forum, and the Board of Studies.

Mechanisms for gaining student feedback
Feedback is channelled via the Staff-Student Forum and the Board of Studies.

Faculty and University Review Mechanisms
The programme is subject to the University's Internal Subject Review process. Every five years degree programmes in each subject area are subject to periodic review. This involves both the detailed consideration of a range of documentation, and a two-day review visit by a review team which includes an external subject specialist in addition to University and Faculty representatives. Following the review a report is produced, which forms the basis for a decision by University Teaching and Learning Committee on whether the programmes reviewed should be re-approved for a further five year period.

Accreditation reports

Additional mechanisms

16 Regulation of assessment

Pass mark
The pass mark is 50 (Postgraduate programmes)

Course requirements

Progression is subject to the University's Masters Degree Progress Regulations, Taught and Research and Examination Conventions for Taught Masters Degrees. Limited compensation up to 40 credits of the taught element and down to a mark of 40 is possible and there are reassessment opportunities, with certain restrictions.

Common Marking Scheme

The University employs a common marking scheme, which is specified in the Taught Postgraduate Examination Conventions, namely:

Summary description applicable to postgraduate Masters programmes		**Summary description applicable to postgraduate Certificate and Diploma programmes**	
<50	Fail	<50	Fail
50-59	Pass	50 or above	Pass
60-69	Pass with Merit		
70 or above	Pass with Distinction		

Role of the External Examiner
An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, after recommendation from the Board of Studies. The External Examiner is expected to:

- See and approve examination papers
- Moderate examination and coursework marking
- Attend the Board of Examiners
- Report to the University on the standards of the programme

In addition, information relating to the programme is provided in:

The University Prospectus (see http://www.ncl.ac.uk/postgraduate/)

The University Regulations (see http://www.ncl.ac.uk/calendar/university.regs/)

The Degree Programme Handbook

The REEM Website: http://www.ncl.ac.uk/sage/postgrad/taught/reem/

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Annex

Mapping of Intended Learning Outcomes onto Curriculum/Modules

		Intended Learning Outcomes			
Module	**Type**	**A**	**B**	**C**	**D**
SPG8014	Compulsory	1,2,3	1,2,3	1,2,3,9	2,3,4,5,6
SPG8017	Compulsory	1,2,3	1,2,3	1,2,3,9	2,3,4,5,6
SPG8015	Compulsory	5,6,7	3,4,5,6,7	5,6,8,9	1,2,3,4,5,6
SPG8016	Comp MSc Optional Dip & Cert	5,6,7	3,4,5,6,7	5,6,7,8,9	2,3,4,5,6
MST8010	Comp MSc Optional Dip & Cert			9	1,2,3,4,5
SPG8009	Comp MSc Optional Dip & Cert	3		9	2,3,4,5
SPG8013	Comp MSc Optional Dip & Cert	1, 4	2,3	9	1,2,3,4,5,6
SPG8012	Comp MSc Optional Dip & Cert	3	2,5	9	2,3,4,5,6
SPG8097	Comp MSc	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6
SPG8098	Comp Diploma	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6