PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	Agricultural and Environmental Science
5	**UCAS/Programme Code**	MSc – 5021; Dip - 3307
6	**Programme Accreditation**	N/A
7	**QAA Subject Benchmark(s)**	N/A
8	**FHEQ Level**	Masters
9	**Date written/revised**	April 2008

10 Programme Aims

1. To provide agriculture, biology, geography, earth science, environmental science and other natural science graduates with a specialised, advanced interdisciplinary training in the scientific principles required for understanding the interactions of agriculture with the environment, with particular emphasis on concepts of sustainability and the ecological consequences of unsound management.
2. To include an element of conversion to allow students from a wide range of backgrounds to progress to the advanced science training commensurate with the focus of this Masters degree and to offer opportunities for personal subject specialisation to aid career positioning.
3. To provide candidates with an appropriate but flexible knowledge and technical skills base required for them to follow successful careers in agricultural research or extension, environmental management and rural development, with opportunities to specialise in either temperate or tropical environments.
4. To address the needs of employers such as: national departments of agricultural extension and rural development or environment and natural resource management in the temperate zone and/or the tropics; environment agencies; farming and wildlife managers; international development agencies such as the UK the Department for International Development (DFID); university departments and research institutes; non-governmental organisations (NGOs) in agricultural and rural development or sustainable environmental management; and international agricultural and environmental consultancies. These organisations need suitably trained staff with a specialised interdisciplinary background to implement their research, management and development programmes.
5. To equip graduates with an advanced conceptual understanding of a range of ecosystems and farming systems; a critical awareness of contemporary sustainability and conservation issues in land and environmental management; a practical knowledge of appropriate scientific survey and experimental techniques; and a practical understanding of how established techniques of research and enquiry are used to develop effective management plans for sustainable agricultural development and environmental conservation.
6. To enable students to meet the Masters level (M, level 4) of the QAA framework for higher education qualifications for England, Wales and Northern Ireland.

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 demonstrate:

A1 an advanced systematic and critical understanding of farming systems in relation to their sustainability and their interaction with natural ecosystems and the agricultural economy;

A2 an appropriate knowledge and understanding of the diversity and assessment of land and water resources, including the origin, properties and environmental/ecological relationships of soils; the assessment of hydrological parameters; the interaction of soils and hydrology from the soil profile to the river catchment scale, and the potential behaviour of soils under different land and water management systems.

A3 a critical awareness of contemporary issues of sustainability and environmental change in the context of agricultural development and environmental management

A4 an understanding of the principles, applications and limitations of scientific environmental survey and of appropriate analytical and experimental techniques for analysing components of (agro) ecosystems

A5 an understanding of appropriate quantitative techniques, experimental design and data analysis and of the application of a systems approach to analysing and modelling the environment;

A6 an advanced knowledge and understanding of a range of appropriate optional subjects to suite personal interests and career positioning including: soil and water conservation; land reclamation; GMOs; tropical soils, environments, ecology and land use; tropical animal production; trees, growth, management and environmental impacts; ecosystem management; GIS and remote sensing; ecological survey techniques.

Teaching and Learning Methods

Teaching Strategy

A foundation knowledge and understanding of quantitative techniques, data analysis, and environmental systems modelling (A5) underpins the specialist material of the degree programme and is taught via lectures, practical and computer classes, and case studies in specific compulsory modules ACE8022 and ACE8020 in Semester 1. Specialist knowledge and understanding of the core material is taught via lectures (A1-A4), practical classes (A2, A4), seminars (A1-A3), case studies (A1-A3) and field classes (A2,A4) in the compulsory modules ACE8021, ACE8027, ACE8028 and ACE8030. Compulsory field classes embedded within module ACE8028 and ACE8030 allows students to experience a wide range of generic field techniques employed in professional environmental surveys (A4) for assessing soil conditions/variability, landscape hydrology, vegetation and wildlife ecology. The 70-credit MSc research project ACE8094 enables survey, experimental design, systems analysis and/or development and management knowledge to be taught in the context of a location of interest to the student and gives them the opportunity to extend their knowledge and practical application of some of the material covered in A1-A6. Optional modules enable students to concentrate on advanced specialist material of individual interest (A6) such as tropical environments (ACE8023), soil and water conservation (ACE8019), tree growth, management and the impacts of trees on the environment (ACE8024), impact of GMOs on food and agricultural production (BIO8016), GIS and remote sensing for environmental and ecological surveys (BIO8014) in an agricultural development context. The Diploma Dissertation (ACE8097 worth 20 credits) allows Diploma candidates to be taught how to undertake a more in depth and critical analysis of any of topics A1-A6 based on library research or secondary data.

Learning Strategy

The understanding of lecture material is encouraged through independent reading (A1-A6) in all modules, assisted by the provision of prioritised reference lists. Such learning is reinforced by formative feedback provided by practical exercises (A2, A4, A6) in ACE8022, ACE8028, ACE8020, ACE8030, ACE8023 and ACE8024; seminars (A1-A3, A6) in ACE8027, ACE8019, ACE8023, ACE8024 and BIO8016; case studies (A1-A3, A6) in ACE8028, ACE8021, ACE8019, ACE8023, BIO8014, ACE8049, and ACE8093, or the Diploma Dissertation (ACE8097) for Diploma candidates (A1-A6), with active participation in fieldwork and a major research project (A1-A6) leading to the MSc thesis (ACE8094) for MSc candidates, with some workshops (A6) and independent problem solving exercises (A4-A6) in ACE8022,

ACE8020 and ACE8030.

Assessment Strategy

Assessment of some modules (A3, A4) is entirely by in-course assessed work including practical class exercises , seminars, case studies, and problem solving exercises (ACE8022, ACE8021, ACE8019, ACE8024, BIO8016 and BIO8014. Assessment of specialist knowledge and understanding is by formal unseen examinations (ACE8027, ACE8028, ACE8020) and by coursework exercises that provide a fuller test of student understanding of the relevant literature (A1-A2, A4, A6). Both employ a range of approaches in order to accurately assess student abilities. Written papers include essay (ACE8027, ACE8028, ACE8020), multi-part questions (ACE8027, ACE8028). Assessed coursework comprises practical exercises (ACE8022, ACE8028, ACE8020, ACE8023 and ACE8024), seminar presentations (ACE8027, ACE8021, ACE8019, ACE8023, ACE8024, BIO8016), case studies (ACE8028, ACE8021, ACE8049, ACE8023, BIO8014), literature reviews, scientific/technical reports and essays (ACE8027, ACE8023, BIO8016, ACE8024, ACE8030, BIO8014 and ACE8094. Field class and other reports are also assessed (A4) for ACE8028, BIO8045 and ACE8030. Some of A1-A6, (depending on the topic of the MSc project or Diploma Dissertation), are also examined by means of a written MSc thesis (ACE8094), or the Diploma Dissertation (ACE8097) for Diploma candidates (A1-A6), and (at the discretion of the External Examiner) by *viva voce* examination.

Intellectual Skills

On completing the programme students should be able to:

B1 research and critically assess the functioning and management of contemporary farming systems within an interdisciplinary, holistic framework and to analyse their interaction with edaphic, biological, climatic and hydrological components of agroecosystems and with socio-economic conditions, and their impact on the natural environment;

B2 assess soil and water resources and their potential under different land management systems, to analyse their function in relation to land management units, habitats or ecosystems from the local to the catchment level, and to consider appropriate management systems for their sustainable use;

B3 assess the sustainability of a range of agricultural and environmental management systems, including techniques for the development of indicators, benchmarks and critical thresholds, and to incorporate concepts of sustainable development into all stages of project management;

B4 use their practical experience in modern environmental survey techniques, experimental design, modelling and analytical techniques in a range of appropriate disciplines; critically assess the data generated by these techniques and present and summarise the results in professional reports;

B5 plan a research project and develop a logical framework for funding of a sustainable development project proposal;

B6 practice a range of subject-specific specialised skills appropriate for specific career goals.

Teaching and Learning Methods

Teaching Strategy

Research, classification and critical assessment skills (B1- B3) are taught via lectures, seminars, case studies and practical classes within compulsory modules ACE8027, ACE8028, ACE8021 and ACE8030, with opportunities to specialise further in optional modules ACE8023, BIO8019, ACE8024, BIO8014 and BIO8016. Experimental design, survey and analytical techniques, systems modelling, and data handling, presentation and appraisal (B4) are taught initially in hands-on computer or laboratory-based practical or problem solving classes and in field classes within the Phase 1 modules ACE8022, ACE8028, and ACE8093. These skills are consolidated by more advanced training in the lectures, practical classes and case studies of subject-specific specialised modules and in the field classes for ecological and environmental survey techniques (BIO8045, ACE8030). Project planning skills (B5) are introduced as practical exercises to produce a logical framework and a full project proposal in the sustainable development module (ACE8021). Further specialised skills (B6), such as soil and water conservation (ACE8019) are taught within optional specialised modules. More advanced training in several of skills B1-B6 is provided on an individual basis during the MSc thesis project (ACE8094), for which students usually work within the existing research group. Individual training for some of the skills B1-B6 are provided for Diploma candidates in the Diploma Dissertation (ACE8097).

Learning Strategy

Independent reading of recommended references is important in understanding how knowledge is applied and techniques used (B1-B3). However, students are encouraged to acquire skills through active participation in project planning, experimental and survey design and data interpretation as part of the coursework covered initially in the Phase 1 modules ACE8022, ACE8028, ACE8021, ACE8020 and later in Phase 2 optional modules, and through participation in field sampling, analysis and data interpretation (B4) in the specialised field techniques in ecological and environmental survey modules BIO8045 and ACE8030. Learning is reinforced and further developed, in either temperate or tropical environments, as MSc students apply their skills in data collection, analysis, interpretation and presentation (B1-6) in their MSc project and thesis ACE8094.

Assessment Strategy

Formal examinations (B1, B2, B4) are used to assess some subject specific/professional skills, particularly when additional reading reinforces learning (ACE8027, ACE8028, ACE8020, ACE8030 and BIO8045). However, most of these skills are assessed by coursework reports and presentations (B1-B6). Some of the skills (B1-B6) are further practiced and assessed by means of the MSc thesis, (ACE8094) or the Diploma Dissertation (ACE8097) and (at the discretion of the External Examiner) by *viva voce* examination.

Practical Skills

On completing the programme students should be able to:

C1 critically evaluate current research and advanced scholarship in the area of the interaction of agriculture, soils, ecology and environment;

C2 critically evaluate the sustainability of agricultural and environmental management systems and have a holistic awareness of current thinking and practice in development;

C3 develop logical thinking and a structured approach to problem-solving, using and developing computer models where appropriate;

C4 comprehend and critically interpret a range of agricultural, environmental and ecological data, present and summarise such data to critically assess its significance, using statistical techniques where appropriate, and produce a reasoned argument;

C5 formulate and design agricultural, environmental and ecological surveys and develop integrated project proposals against different types of objectives;

C6 formulate and test hypotheses using logical and consistent quantitative or qualitative criteria.

Teaching and Learning Methods

Teaching Strategy

The cognitive skills C2-C6 are developed initially in the degree programme's Phase 1 modules through a combination of lectures, practical classes exercises (ACE8022, ACE8028, ACE8020, ACE8045, ACE8023, ACE8024, and ACE8021); problem-solving exercises (ACE8022, ACE8020, AES835); case studies (ACE8028, ACE8021, ACE8019, ACE8023, BIO8014, ACE8049) and field classes (ACE8028, ACE8030, BIO8045, ACE8024). They are progressed in the specialised compulsory modules and in optional specialised modules, where they are applied to specific research or management issues, sometimes in a field-based environment (C5). Cognitive skills C1 are particularly developed in specific specialised compulsory modules through lectures, seminars (ACE8027, ACE8021, ACE8019, ACE8023, ACE8024, BIO8016), and case studies (ACE8028, ACE8021, ACE8019, ACE8023, BIO8014, ACE8049) involving literature reviews, guided reading and critical analysis of presentations. The MSc project and thesis (ACE8094) allows cognitive skills C1-C6 to be applied to a specific research problem or issue guided by individual supervision, sometimes in a tropical location. The Diploma Dissertation (ACE8097) teaches the use of cognitive skills C1-C6 in the context of an in-depth and critical review of research results.

Learning Strategy

Students are encouraged to acquire cognitive skills in a variety of ways including: the development of a project proposal and development of a logical framework for a development project during their sustainable development module ACE8021 (C2); through developing computer models to simulate environmental systems in ACE8020 (C3); through experience of case studies, course work and discussion following seminars (C1-C6) in (ACE8027, ACE8021, ACE8019, ACE8023, ACE8024, BIO8016 and ACE8049); and through designing a sampling and analysis strategy and analysing the data from ecological and environmental field surveys and reflecting on field exercises (C4-C5) in ACE8045 and ACE8030. The design and practice of the MSc research project (ACE8093 and ACE8094) is also important and is particularly useful for further developing all these cognitive skills but particularly for understanding the development of and testing of hypotheses (C6). The Diploma Dissertation (ACE8097) is useful in developing some of the cognitive skills C1-C5.

Assessment Strategy

Key skills are rarely assessed by formal examination (D5-D7). Scientific/technical reports (D1-D8) in ACE8028, ACE8030, ACE8021, ACE8019, ACE8024, project proposals (ACE8021), a logical framework for a development project (ACE8021), the MSc thesis (ACE8094) and oral examination, or the Diploma Dissertation (ACE8097) and other elements of assessed coursework (D1-D4, D6-D8) are the main methods of assessment. Assessed seminar presentations seminars (ACE8027, ACE8019, ACE8023, ACE8024, BIO8016 and ACE8049) test oral communication and presentation skills, as does the final *viva voce* examination of the MSc thesis. (D1).

Transferable/Key Skills

On completing the programme students should be able to:

D1 communicate conclusions clearly to specialist and non-specialist audiences;
D2 plan, organise and prioritise work activities in order to meet deadlines;
D3 show originality and initiative in tackling and solving problems;
D4 act autonomously in planning and implementing tasks at a professional or equivalent level;
D5 take personal responsibility to independently advance their knowledge and understanding, and to develop new skills to a high level;
D6 use library and other information sources skilfully and appropriately;
D7 use IT resources skilfully and appropriately;
D8 to make decisions in complex and unpredictable situations.

Teaching and Learning Methods

Teaching Strategy
The teaching of transferable skills is an important part of the MSc and Diploma throughout many modules. Verbal presentation skills and dealing with critical feedback are developed in seminars (D1) associated with several modules seminars (ACE8027, ACE8021, ACE8019, ACE8023, ACE8024, BIO8016 and ACE8049). All skills (D1-D8) are important in planning, carrying out, presenting and being examined in the research project and MSc thesis ACE8094. Field classes (D1-D4) in ACE8030, ACE8045, ACE8028 and ACE8024, development of project proposals (D1, D3-D5, D7 and D8) in ACE8021, ACE8093 and independent problem solving (D2-D8) in ACE8022, ACE8020, ACE8030 teach students about the importance of communication skills, information sources and originality and independence in the professional implementation of their knowledge.

Learning Strategy
A wide range of methods is used to reinforce the teaching of key skills and aid understanding. Whilst there is some recommended reading (D1-D8) most key skills (D1-D6) are better developed though field work (ACE8028, ACE8045, ACE8030, ACE8024); case studies (D1-D4, D6-D8)) in ACE8028, ACE8021, ACE8019, ACE8023, BIO8014, and the MSc research project (ACE8094) or Diploma Dissertation (ACE8097) (D1-D8); seminars (D1, D3-D5, D7) in ACE8027, ACE8021, ACE8019, ACE8023, ACE8024, BIO8016 and ACE8049; problem solving exercises in ACE8022, ACE8020, ACE8030 and logical framework development in ACE8021 (D2-D8) and communicating information in short oral presentations in ACE8027, ACE8021, ACE8030 and the MSc project (D1).

Assessment Strategy

Key skills are rarely assessed by formal examination (D5-D7). Scientific/technical reports (D1-D8) in ACE8028, ACE8030, ACE8021, ACE8019, ACE8024, project proposals (ACE8021), a logical framework for a development project (ACE8021), the MSc thesis (ACE8094) and oral examination, or the Diploma Dissertation (ACE8097) and other elements of assessed coursework (D1-D4, D6-D8) are the main methods of assessment. Assessed seminar presentations seminars (ACE8027, ACE8019, ACE8023, ACE8024, BIO8016 and ACE8049) test oral communication and presentation skills, as does the final *viva voce* examination of the MSc thesis. (D1).

12 Programme Curriculum, Structure and Features

Basic structure of the programme

This is a one-year, fulltime modular Masters degree programme (180 credits) based in the School of Agriculture, Food and Rural Development. It conforms to the modular structure of other MSc programmes taught in the School of Agriculture, Food and Rural Development and the School of Biology over three 'Phases' (*See Figure 1*), and is delivered through inter-school collaboration. It consists of 110 credits in the taught component, with approximately 65 credits in MSc Phase 1 (September-January) and 45 credits in MSc Phase 2 (January-March). A research project worth a further 70 credits, is undertaken in MSc Phase 3 (April-September)**.** Of the taught modules, 80 credits are compulsory modules appropriate to the focus of the degree, whilst the remaining 30 credits are chosen from options offering flexibility and opportunity for personal specialisation and career positioning. 65 credits of taught modules are normally taken during Semester 1 (MSc Phase 1) and most are examined in January. These consist mainly of compulsory modules (55 credits), but include one 10 credit module option. Further module options (30 credits) are given over a shorter 8 week period in Semester 2 (MSc Phase 2), followed by a compulsory field class module (10 credits). All taught modules given in MSc Phase 2 are assessed by coursework only**.** The MSc thesis has to be submitted by 31 August.

Students will have to satisfy the standard University regulations given in Examination Conventions for Taught Postgraduate Masters' Programmes. Decisions on fail, pass, diploma, MSc merit and MSc distinction awards will be made by the Joint MSc Board of Examiners in late September and will be based on overall performance in all aspects of the subject.

Six compulsory modules (55 credits) are given during Phase 1 . These include ACE8027

Farming Systems and Agroecology (10 credits) and ACE8045 Ecological Survey Techniques (10 credits) that form key components of the programme. A further two compulsory modules are given in Phase 2, comprising ACE8049 Climate Change & Land Use (10 credits) and ACE8030 Environment and Habitat Assessment Field Class (10 credits). One 10 credit specialist optional module is normally taken in Phase 1 and another 20 credits in Phase 2. Most taught 'compulsory' and 'optional' modules given over Phase 1 are assessed both by coursework and written examinations in January. All modules given over Phase 2 are assessed by coursework only. The learning outcomes described previously are mapped against module synopses below.

Certain compulsory modules delivered in Phase 1 provide an element of conversion, to allow students from a wide range of backgrounds to take each module, and the necessary scientific knowledge and skills base to progress with more advanced specialised compulsory modules. They also include vocational elements to provide a suitable background and skills for employment. ACE8022 Quantitative Techniques, Experimental Design and Data Analysis (10 credits) provides students with the expertise necessary to design field and laboratory experiments, to give them the skills necessary to analyse observational and experimental data using a variety of statistical software, and to understand and interpret the results of their analyses (A4, B4, C4, C6, D3). ACE8028 Environmental Assessment: Land and Water Resources (10 credits) provides an introduction to soils and water resources; the environmental variables influencing soil and hydrological processes; the assessment of data sources and methods of interpretation; progressing to an analysis of soil variability, land use potential and habitat assessment, and culminating in a case study involving land suitability and/or environmental impact assessment (A2-A4, B2, B4, C1, C3, C5). ACE8020 Environmental Systems and Modelling (10 credits) explores the systems approach to understanding the environment and shows how key biophysical processes and their interactions can be analysed with the help of quantitative models (A5, B4, C3, C6, D3-D5).

Other compulsory taught specialised modules continue to provide a conversion element but proceed to advanced science training commensurate with Masters-level teaching and include vocational elements appropriate to the specific aims and objectives of the degree programme. ACE8027 Farming Systems and Ecology (10 credits) examines the interface between farm management practices, techniques and technologies and the environment from a systems perspective and considers the degree to which farming systems are shaped by agro-ecological constraints and/or socio-economic factors. This module provides some of the key concepts that underpin the philosophy of the degree programme (A1-A3, B1-B3, C1-C2, D6, D8).). ACE8030 Environmental and Habitat Assessment Field Class, in combination with ACE8045 Ecological Survey Techniques (10 credits)and ACE8028 Environmental Assessment: Land and Water Resources, provide students with the theoretical background and field techniques to design and carry out integrated environmental, ecological, soils and hydrological surveys. It includes a programme of field classes that allow students to gain experience in specialist field techniques and develop skills in the analysis and interpretation of data (A4, B4, CC4-C6, D1-D8). ACE8021 Sustainable Development and Environmental Change (10 credits) evaluates concepts of sustainability and their application in agricultural and environmental management in the context of development in a dynamic, changing biophysical, economic and socio-cultural environment. A holistic and interdisciplinary approach is adopted to examine how natural resources can be better managed to maintain or increase productivity, profitability and stability, whilst still conserving or enhancing the resource base (A1, A3, B1, B3, B5, C2, D2, D4, D8).

Optional modules allow students to develop specialised interests and to enhance their employment opportunities in specific fields of agricultural and environmental management. One particular feature of the programme is the opportunity to specialise in the tropics through opting for ACE8023 Tropical Environments, Ecology and Land Use (10 credits). This module reviews the environmental characteristics of the major tropical ecosystems, their vegetation, soils and land use systems, treating soils as components of both natural and managed ecosystems, and assesses the sustainability of land use practices and threats to ecological stability under low input and more intensive land management systems (A2-A4, B1-B4, C1-C2, C4-C5, D1-D6). Other module options include: ACE8019 Soil and Water Conservation; ACE8021 Tropical Animal Production; BIO8014 GIS and Remote Sensing; AES 845 Trees,

Growth and Management; and ACE8011 Genetically Modified Organisms in Food and Agriculture (A6, B6, C1-C6, D1-D8).

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

1. The MSc degree utilises a wide range of agricultural and environmental expertise uniquely available in the School of Agriculture, Food and Rural Development, which has a long track record of research and teaching, built upon the establishment of the first UK-based degree programme in this field in 1975.
2. It is innovative in adopting an holistic approach taught across other Schools in the Faculty of Science, Agriculture and Engineering. This approach is strongly underpinned by science, combining agricultural and ecological approaches to environmental management with the objective of sustainable development that is physically and biologically viable and socio-economically acceptable.
3. Optional modules allow students to develop specialised interests and to enhance their employment opportunities in specific fields of agricultural and environmental management, including the opportunity to specialise in the tropical environment.
4. The programme offers unique opportunities for students to develop skills in framing sound development projects and to understand how their expertise might be used in subsequent employment.
5. The programme offers particular opportunities to develop field experience and practical skills, both in taught modules and in the MSc project.
6. The substantial 4 month long MSc project provides a unique opportunity for students to gain first-hand practical and field experience, much in demand from employers both in the development and consultancy field, and to apply their newly learnt skills in field situations. In this context, students usually undertake their project with an existing university research group or a nationally-based institution working in an appropriate field. Projects may also be undertaken in collaboration with an overseas research institution.

Programme regulations (link to on-line version)

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

13 Criteria for admission

Entry qualifications

A 2nd class degree from a UK University, or its overseas equivalent, is normally the minimum qualification for entry. Preferred first-degree subjects are biology, geography, environmental science or agriculture. Other relevant science degrees, or an economics degree are also acceptable.

Admissions policy/selection tools

Offers of places will be made to suitably qualified candidates based on information provided in the application form and will be conditional upon a satisfactory reference and upon the applicant achieving a minimum of a 2nd class degree, if they do not hold such a degree at the time of the application.

Non-standard Entry Requirements

Applicants who hold non-standard qualifications, and/or have relevant experience, will be considered on an individual basis.

Additional Requirements

Level of English Language capability

Applicants for whom English is not a first language must provide evidence of a satisfactory command of English, preferably by means of a TOEFL score of 575 or greater, or by an IELTS score of 6.5 or greater.

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 Head of School may be consulted. Issues relating to the programme may be raised at the Staff-Student Committee, and/or at the Board of Studies. A system of regular fortnightly meetings with the Degree Programme Director provides and opportunity to discuss progress and option choices.

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 School Teaching and Learning Committee and at the Board of Studies. Student opinion is sought at the Staff-Student Committee 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 Staff-Student Committee.

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 Committee, and the Board of Studies. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking the students' views on the quality of the learning and teaching in their HEIs. With reference to the outcomes of the NSS and institutional student satisfaction surveys actions are taken at all appropriate levels by the institution.

Mechanisms for gaining student feedback
Feedback is channelled via the Staff-Student Committee 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.

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/undergraduate/ or http://www.ncl.ac.uk/postgraduate/

The School Brochure (contact enquiries@ncl.ac.uk)

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

The Degree Programme Handbook

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

A1	An advanced systematic and critical understanding of farming systems in relation to their sustainability and their interaction with natural ecosystems and the agricultural economy	**ACE8027**; *ACE8023*
A2	An appropriate knowledge and understanding of the diversity and assessment of land and water resources, including the origin, properties and environmental/ecological relationships of soils; the assessment of hydrological parameters; the interaction of soils and hydrology from the soil profile to the river catchment scale, and the potential behaviour of soils under different land and water management systems.	**ACE8028;** *ACE8023; ACE8019*
A3	A critical awareness of contemporary issues of sustainability and environmental change in the context of agricultural development and environmental management	**ACE8021**; **ACE8049**; *ACE8023; ACE8027*
A4	An understanding of the principles, applications and limitations of scientific environmental survey and of appropriate analytical and experimental techniques for analysing components of (agro) ecosystems	**ACE8030; ACE8045; ACE8028;** *ACE8023*
A5	An understanding of appropriate quantitative techniques, experimental design and data analysis and of the application of a systems approach to analysing and modelling the environment	**ACE8022; ACE8020; ACE8098**
A6	An advanced knowledge and understanding of a range of appropriate optional subjects to suite personal interests and career positioning including: tropical environments, ecology and land use; soil and water conservation; pesticides, use and environmental properties; trees, growth, management and environmental impacts; techniques in pest management; weed control; GMOs in food and agriculture; tropical animal production; ecosystem management; wildlife conservation policy and practice; GIS and remote sensing; environmental and rural resource economics; land reclamation; soil fertility in organic systems; sustainable land management; and sustainable livelihoods analysis	*ACE8023; ACE8024; BIO8016; BIO8014; ACE8025; ACE8019; BIO8010; ACE8029*
B1	Ability to research and critically assess the functioning and management of contemporary farming systems within an interdisciplinary, holistic framework and to analyse their interaction with edaphic, biological, climatic and hydrological components of agroecosystems and with socio-economic conditions, and their impact on the natural environment	**ACE8027; ACE8028; ACE8021;** *ACE8023*
B2	Ability to assess soil and water resources and their potential under different land management systems, to analyse their function in relation to land management units, habitats or ecosystems from the local to the catchment level, and to consider	**ACE8028; ACE8030; ACE8021; ACE8027;** *ACE8023; ACE8019*

	appropriate management systems for their sustainable use	
B3	Ability to assess the sustainability of a range of agricultural and environmental management systems, including techniques for the development of indicators, benchmarks and critical thresholds, and to incorporate concepts of sustainable development into all stages of project management	**ACE8021; ACE8027;** *ACE8019; ACE8023*
B4	Practical experience in modern environmental survey techniques, experimental design, modelling and analytical techniques in a range of appropriate disciplines, and the ability to critically assess the data generated by these techniques and to present and summarise the results in professional reports	**ACE8045; ACE8030; ACE8022; ACE8020; ACE8028, ACE8093**
B5	Ability to plan a research project and to develop a logical framework for funding of a sustainable development project proposal	**ACE8021; ACE8093, ACE8094**
B6	A range of subject-specific specialised skills appropriate for specific career goals	*ACE8023; ACE8024; BIO8016; BIO8014; ACE8045; ACE8019*
C1	Critically evaluate current research and advanced scholarship in the area of the interaction of agriculture, soils, ecology and environment	**ACE8027; ACE8028; ACE8030; ACE8094; ACE8093**
C2	Critically evaluate the sustainability of agricultural and environmental management systems and have a holistic awareness of current thinking and practice in development	**ACE8027; ACE8021;** *ACE8023; ACE8024;* **ACE8049**
C3	Develop logical thinking and a structured approach to problem-solving, using and developing computer models where appropriate	**ACE8022; ACE8020; ACE8028; ACE8094**
C4	Comprehend and critically interpret a range of agricultural, environmental and ecological data, present and summarise such data to critically assess its significance, using statistical techniques where appropriate, and produce a reasoned argument	**ACE8022; ACE8020; ACE8028; ACE8094;** *ACE8023; ACE8045*
C5	Formulate and design agricultural, environmental and ecological surveys and develop integrated project proposals against different types of objectives	**ACE8028; ACE8030; ACE8094; ACE8045**
C6	Formulate and test hypotheses using logical and consistent quantitative or qualitative criteria	**ACE8022; ACE8020; ACE8028; ACE8027; ACE8094**
D1	Communicate conclusions clearly to specialist and non-specialist audiences	**ACE8027; ACE8028; ACE8021; ACE8030; ACE8094;** *ACE8023; ACE8024; BIO8014 ; BIO8016*
D2	plan, organise and prioritise work activities in order to meet deadlines	**ACE8094**
D3	show originality and initiative in tackling and solving problems	**ACE8094**
D4	act autonomously in planning and implementing tasks at a professional or equivalent level	**ACE8094**
D5	take personal responsibility to independently advance their knowledge and understanding, and to develop new skills to a high level	**ACE8094**
D6	use library and other information sources skilfully and appropriately	All modules
D7	use IT resources skilfully and appropriately	All modules
D8	to make decisions in complex and unpredictable situations	**ACE8094; ACE8030**