# BSc Habitat and Soil Management

**UCAS code: D963**

**For students entering Part 1 in 2003**

Awarding Institution: The University of Reading
Teaching Institution: The University of Reading
Relevant QAA subject benchmarking group: Earth Science, Environmental Sciences & Environmental Studies

Faculty of Science
Programme length: 3 years
Date of specification: April 2005
Programme Director: Dr T R Astin (SHES)
Programme Adviser: Dr C J B Mott (SHES)
Board of Studies: BSc Degrees in Environmental Sciences

**Summary of programme aims**

The programme aims to provide the student with a degree level education in Soil Science with special emphasis on an understanding of the interaction of soil conditions and plant growth.

**Transferable skills**

The University's Strategy for Teaching and Learning has identified a number of generic transferable skills which all students are expected to have developed by the end of their degree programme. In following this programme, students will have had the opportunity to develop their skills relating to career management, communication (both written and oral), information handling, numeracy, problem-solving, team working and use of information technology.

As part of this programme students are expected to have gained experience and show competence in the following skills: IT (word-processing, data manipulation, use of simulation modelling techniques), scientific writing, oral presentation, team-working, problem-solving, use of library resources, time management, career planning and management and simple risk assessment.

**Programme content**

The profile which follows states which modules must be taken (the compulsory part), together with lists of modules from which the student must make a selection (the 'selected' part). Students must select from these modules as they wish, in consultation with their programme adviser, to make 120 credits in each Part. It is possible through option selection to study a foreign language, if desired, throughout the whole programme. The number of credits for each module is shown after its title.

**Part 1 (three terms)**: **2003/4**

| *Compulsory modules* (***80*** *credits)* | | *Credits* | *Level* |
|---|---|---|---|
| PS1AA1 | *Plants in Agriculture* | 10 | C |
| PS1BA1 | *How Plants Work* | 10 | C |
| SS1B1 | *Biological Processes in Soil* | 10 | C |
| SS1C1 | *Soil Use and Management* | 10 | C |
| PS1BA2 | *Plant Development* | 10 | C |
| SS1A2 | *Soils, Land and the Environment* | 10 | C |
| SS1B2 | *Soil Processes and Applications* | 10 | C |

| | | | |
|---|---|---|---|
| SS1A3 | *Soil Field Studies* | 10 | C |

*Selected Modules*
Any combination, to give a total of **40** credits, from the following list:

Part 1 modules from:

Agriculture

| | | *Credits* | *Level* |
|---|---|---|---|
| AP1A01 | *Introduction to Rural Environmental Science* | 10 | C |
| AP1A10 | *Countryside and the Environment* | 10 | C |
| AP1A11 | *Introduction to the Basis of Crop Production* | 10 | C |

Animal and Microbial Sciences

| | | | |
|---|---|---|---|
| AM1Z11 | *Environmental Biology* | 10 | C |
| BI1C10 | *Cell biology and Biochemistry* | 10 | C |
| BI1C11 | *Genetics and Molecular Biology* | 10 | C |
| BI1M10 | *Biodiversity* | 10 | C |
| BI1S10 | *Chemistry for Biologists* | 10 | C |

Plant Sciences

| | | | |
|---|---|---|---|
| PS1AB2 | *Physical Ecology* | 10 | C |
| PS1HN1 | *Ecology and the Landscape* | 10 | C |

and may include a language 20

**Part 2 (three terms): 2004/5**

| *Compulsory modules* (***50*** *credits*) | | *Credits* | *Level* |
|---|---|---|---|
| GO2J4 | *Skills for Earth and Environmental Scientists* | 10 | I |
| PS2BB4 | *Evolution of Plant Biodiversity* | 10 | I |
| PS2BC5 | *Ecological Aspects of Environmental Assessment* | 10 | I |
| SS2B5 | *Soil Conditions and Plant Growth* | 10 | I |
| SS2A6 | *Soil Survey and Field Experimentation* | 10 | I |

*Optional Modules*
Any combination, to give a total of **70** credits, chosen from the following list:

(a) Part 2 module(s) in the Soil Science list not taken as a compulsory module
(b) Other Part 2 modules chosen from the following:

| | | *Credits* | *Level* |
|---|---|---|---|
| AP2A26 | *Forestry and Woodlands* | 10 | I |
| AP2A32 | *Arable Cop Protection* | 10 | I |
| AP2A37 | *Countryside Management* | 10 | I |
| AP2A38 | *Organic Farming* | 10 | I |
| PS2BA4 | *Economic Botany* | 10 | I |
| PS2BE5 | *Ecological Biochemistry* | 10 | I |
| SS2A4 | *Soil Physical Properties* | 10 | I |

| | | | |
|---|---|---|---|
| SS2C4 | *Soil Microbiology & Biotechnology* | 10 | I |
| SS2D4 | *Soils & Soil Development* | 10 | I |
| SS2D5 | *Sustainable Land Management* | 10 | I |

(c) A language 20

**Part 3 (three terms): 2005/6**

| *Compulsory modules (**100** credits)* | | *Credits* | *Level* |
|---|---|---|---|
| PS3BF8 | *Botany Field Course* | 20 | H |
| PS3BG8 | *Biogeography* | 10 | H |
| SS3A8 | *Soil Fertility Management* | 10 | H |
| SS3PH | *Habitat and Soil Management Project* | 40 | H |

**One** from:

| | | | |
|---|---|---|---|
| SS3B7 | *Soils, Vegetation and the Atmosphere* | 10 | H |
| SS3C7 | *Soil and Water Quality Evaluation & Management* | 10 | H |

and **one** from

| | | | |
|---|---|---|---|
| SS3C8 | *Soils and the Global Environment* | 10 | H |
| SS3D8 | *Multivariate Methods of Statistical Analysis* | 10 | H |

*Option modules*
Any combination, to give a total of **20** credits, chosen from the following list:

(a) Part 3 module(s) in the Soil Science list not taken as a compulsory module:

| | | | |
|---|---|---|---|
| SS3A7 | Soil and Mineral Equilibria using MINEQL+ | 10 | H |
| SS2E5 | Environmental Mineralogy | 10 | I |

(b) Other Part 3 modules chosen from the following:

| | | *Credits* | *Level* |
|---|---|---|---|
| AP3A58 | *Crop Water Relations and Irrigation* | 10 | H |
| AP3A59 | *Forestry and Agroforestry* | 10 | H |
| PS3AE7 | *Weed Management* | 10 | H |
| PS3AG8 | *Weed Ecology* | 10 | H |
| PS3BC7 | *Conservation and Biodiversity* | 10 | H |
| PS3HJ8 | *Landscape Management Techniques* | 10 | H |

(c) A language 20

**Progression requirements**
To gain a threshold performance at Part 1 a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 1, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1. In addition,

students shall normally obtain at least 40% in modules PS1AA1, PS1BA1, SS1B1, SS1C1, PS1BA2, SS1A2, SS1B2, and SS1A3 averaged together.

To gain a threshold performance at Part 2 a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 2, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 2 to Part 3, a student shall normally be required to achieve a threshold performance at Part 2. In addition, students shall normally obtain at least 40% in the compulsory modules GO2J4, PS2BB4, PS2BC5, SS2B5, and SS2A6, averaged together.

**Summary of teaching and assessment**

Teaching is organized in modules that typically involve lectures, problem solving classes, and practical classes. The assessment is carried out within the University's degree classification scheme, details of which are in the programme handbooks. The pass mark in each module is 40%. Parts 1 and 2 are assessed by a mixture of coursework and formal examination. In Part 3 there are some modules which are assessed wholly by coursework and others wholly by examination: the details are given in the module descriptions. The Part 3 project involves a substantial component of independent learning, under the supervision and guidance of Project Supervisors. The projects are assessed on the basis of formal reports, oral presentations and development of independent learning skills.

Part 2 contributes one third (33%) of the overall assessment and Part 3 the remaining two thirds (67%).

**Admission requirements**
Entrants to this programme are normally required to have obtained:
UCAS Tariff: 260 points overall, including any two science subjects at A2 level.

**Admissions Tutor**: Dr Hazel McGoff (h.j.mcgoff@rdg.ac.uk)

**Support for students and their learning**
Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4000 current periodicals, has a range of electronic sources of information and houses a Student Learning Centre with some 200 workstations. There are language laboratory facilities available for students taking modules (available as an option within the BSc Soil Science programme) offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, the Careers Advisory Service, the University's Special Needs Adviser, Hall Wardens and the Students' Union.

Within the providing department additional support is given through extensive personal contact during practical and field classes.

**Career prospects**
Students have found employment in a wide range of environmentally related areas, especially in the consultancy industry, local government and research organisations.

**Opportunities for study away from Reading**
It is possible within this programme for a student, provided he/she has passed Part 2, to accept a relevant placement in the UK or overseas for one year before beginning Part 3.

**Educational aims of the programme**
The programme aims to provide a degree-level education in soil and plant sciences and to establish a thorough scientific basis for the application of the subject to a wide variety of habitats and contemporary applications. It aims to produce soil scientists who have sufficient training and experience of plants, in both cultivated and natural environments, to be able to make a contribution to the sustainable use of soil as a medium for plants and crops at all levels of scale.

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

***Knowledge and Understanding***

**A. Knowledge and understanding of:**

1. soil science as an integrated interdiscipline involving chemical, physical, biological and earth science aspects
2. the relationship between soils, plants and plant communities
3. the mangement of soil quality for plant performance

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**Teaching/learning methods and strategies**
These topics are presented in formal lectures and seminar presentations, combined with practical and field classes. Integration across subject areas is encouraged, especially through field teaching (organised for both soil and plant studies), seminars and other discussion opportunities. Emphasis is placed on encouraging the student's own enthusiasms within the subject area through the provision of special topic modules and a project incorporating both library and practical aspects. Students are able to specialise in specific areas such as weeds, forestry, crops and landscape.

*Assessment*
Knowledge is tested through a combination of coursework (including essays, reports on laboratory practical and fieldwork and tests, some of which is formative) with (summative) unseen examinations. Project dissertations and oral presentations also contribute.

## *Skills and other attributes*

**B. Intellectual skills** - able to

1. Obtain and use information and ideas from both on- and off-line sources
2. Transfer and integrate appropriate knowledge and methods from one topic within the subject to another
3. Understand how scientific knowledge can be applied in a practical context
4. Understand the evolving state of knowledge in a rapidly developing field
5. Construct and test hypotheses
6. Plan, conduct and write a report on an independent research project

**Teaching/learning methods and strategies**

Soil/plant relations is an applied discipline and the use of basic science applied to real life contexts is at the heart of all teaching in the subject. Field based and other practical work is used extensively to provide develop skills 2 and 3.

Seminar and essay/report work is used to provide a context for 1 and 4. The long independent research project is designed to teach and use skills 5 and 6.

*Assessment*

Development of these skills is essential to permit the student to perform well in much of the coursework and in the examinations associated with the programme. Skills 2 and 4 are an important component of the successful completion of Part 3 work and skills 1, 3, 5 and 6 are tested in the research project report.

**C. Practical Skills**

Students learn to carry out practical work, in laboratory and field, with an understanding of safety and risk. They gain experience of the following skills:

1. Soil assessment, chemical, physical and biological
2. Identification and assessment of soils and plant communities in the field
3. Manipulation of computer simulation models
4. Data analysis using appropriate statistical techniques

**Teaching/learning methods and strategies**

These skills are taught specifically during practical and field classes. Individual tuition is given within a class context to ensure that techniques are understood. Some practical skills, including the use of high level research equipment, may be developed to an advanced level in the Part 3 research project.

*Assessment*

The development of practical skills is tested both formatively and summatively through written reports on practical work, presentations and fieldwork, and in the dissertation based on the research project.

**D. Transferable skills** - able to

1. use IT (including appropriate software packages)
2. communicate scientific ideas in written and oral form
3. work as part of a team
4. use library and internet resources
5. manage time
6. plan their career

**Teaching/learning methods and strategies**

Use of IT and library resources is embedded throughout the programme and is essential to complete much of the coursework. Written communication skills are developed through reports and essays and further in the preparation of the research project dissertation, activities which also require the use of library and internet resources. Oral skills are developed through seminars, some of which are organised on a small team basis. Teamwork is an essential element of field class mini-project work and is specifically tested in some laboratory work. Time management is essential for all laboratory and field activities, and is essential for the effective completion of the programme. There is a specific module on Career Management skills as well as discussion through the personal tutor system and the completion of a personal academic record.

*Assessment*

Development of skills under 1, 2 and 4 is essential for a good performance in much of the coursework associated with the programme. Effective use of skills 3 and 5 will also make an important contribution and skill 6 is specifically assessed.

*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 of the learning outcomes, content and teaching, learning and assessment methods of each module can be found in module and programme handbooks