

BSc Environmental Biology

UCAS code: C150

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| Awarding Institution: | The University of Reading |
| Teaching Institution: | The University of Reading |
| Relevant QAA subject benchmarking group(s): | Biosciences |
| Faculty of Life Sciences | Programme length: 3 years |
| For students entering Part 1 in 2002 | |
| Programme Director: | Dr P.D. Darbre |
| Programme Adviser: | Dr J.D. Ross |
| Board of Studies: | Biological Sciences |
| Date of specification: March 2004 | |

Summary of programme aims

This degree is concerned especially with all aspects of living organisms and their environment, their interaction with one another and reaction to the abiotic environment. Although the major emphasis is on natural population and habits, consideration is also given to ecosystems that have been perturbed or polluted. The subject matter of Parts 1 and 2 is broadly based, while Part 3 provides a coherent in-depth area of study of the student's choice. Students are expected to gain a broad understanding of the concepts underpinning biology and the environmental factors which interact with organisms. They will receive training, and be expected to demonstrate competence, in laboratory techniques in biology, the use of computers to access information resources and the use of statistical programmes for data analyses. Students will be expected to acquire individual and group communications skills in written work and in oral and poster presentations. The development of critical reading skills will be strongly encouraged. The Part 3 research project will allow students to apply the learned skills in an independent piece of work. (For a full statement of the programme aims and learning outcomes see below).

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 enhance their skills relating to career management, communication (both written and oral), information and data handling, numeracy, problem solving, team working and use of information technology.

As part of this programme all students are also expected to have gained experience and show competence in the following transferable skills:

1. The ability to assess, evaluate and present scientific data.
2. The ability to design and undertake a programme of scientific investigation and to effectively communicate the aims and results of this investigation.
3. A range of field and laboratory-based practical skills

Programme content

The profile which follows states which modules must be taken (the compulsory part), together with one or more lists of modules from which the student must make a selection (the 'selected' modules). Students must choose such additional modules as they wish, in consultation with their programme adviser, to make 120 credits in each

Part. The number of module credits for each module is shown in brackets after its title.

| Part 1 (three terms) | | <i>Credits</i> | <i>Level</i> |
|-----------------------------|---------------------------------------|----------------|--------------|
| <i>Compulsory modules</i> | | | |
| AM1Z11 | <i>Environmental biology</i> | 10 | C |
| BI1C10 | <i>Cell Biology and biochemistry</i> | 10 | C |
| BI1C11 | <i>Genetics and molecular biology</i> | 10 | C |
| BI1M10 | <i>Biodiversity</i> | 10 | C |
| BI1Z10 | <i>Ecology</i> | 10 | C |
| BI1Z11 | <i>Community ecology</i> | 10 | C |
| PS1BA2 | <i>Plant development</i> | 10 | C |

Required modules

In addition, students without a post-16 qualification in chemistry must take:

| | | | |
|--------|---------------------------------|----|---|
| BI1S10 | <i>Chemistry for biologists</i> | 10 | C |
|--------|---------------------------------|----|---|

Optional modules

Students will choose additional modules up to a total of 120 credits which include those in the following list:

| | | | |
|--------|---|----|---|
| PS1BA1 | <i>How plants work</i> | 10 | C |
| AM1Z10 | <i>The whole mammal</i> | 10 | C |
| GO1A1 | <i>Earth structure & processes</i> | 10 | C |
| GG1P1 | <i>Physical Geography 1: Climatology & Hydrology</i> | 20 | C |
| GO1C2 | <i>Earth history & evolution</i> | 10 | C |
| GG1P4 | <i>Physical Geography 2: Geomorphology & Biogeography</i> | 20 | C |
| SS1A2 | <i>Soils, Land and Environment</i> | 10 | C |
| SS1B1 | <i>Biological Processes in Soil</i> | 10 | C |

or elsewhere from the programmes of other Schools subject to the agreement of the Programme Adviser.

| Part 2 (three terms) | | <i>Credits</i> | <i>Level</i> |
|-----------------------------|---|----------------|--------------|
| <i>Compulsory modules</i> | | | |
| PS2BB4 | <i>Plants and environment</i> | 10 | I |
| AM2Z33 | <i>Animal behaviour</i> | 10 | I |
| PS2BC5 | <i>Ecological aspects of environmental assessment</i> | 10 | I |
| AM2Z34 | <i>Invertebrate zoology</i> | 10 | I |
| PS2BB5 | <i>Career Management Skills and essay</i> | 10 | I |
| AS2A1 | <i>Statistics for Life Sciences</i> | 10 | I |

Required modules

Students must select **at least one of**

| | | | |
|--------|---|----|---|
| AM2Z38 | <i>Field Course</i> | 10 | I |
| PS2BG3 | <i>The British flora (Field Course)</i> | 10 | I |

and only one of

| | | | |
|--------|------------------------|----|---|
| AM2Z37 | <i>Aquatic biology</i> | 10 | I |
| PS2BA6 | <i>Plant families</i> | 10 | I |

Optional modules

Students will choose additional modules up to a total of 120 credits from the programmes of other Schools subject to the agreement of the Programme Adviser.

| Part 3 (three terms) | <i>Credits</i> | <i>Level</i> |
|-----------------------------------|----------------|--------------|
| <i>Compulsory modules</i> | | |
| AM3S75 <i>Biology Project</i> | 40 | H |
| AM3S76 <i>Essays and seminars</i> | 20 | H |

Required modules

Students must select **at least one of**

| | | |
|-----------------------------------|----|---|
| AM3Z79 <i>Field Course</i> | 20 | H |
| PS3BF8 <i>Botany Field Course</i> | 20 | H |

Optional modules

Students will choose additional modules up to a total of 120 credits which include those in the following list

| | | |
|---|----|---|
| AM3Z72 <i>Molecular ecology and conservation</i> | 10 | H |
| AM3Z73 <i>Functional biology of aquatic invertebrates</i> | 10 | H |
| AM3Z74 <i>Conservation biology</i> | 10 | H |
| AM3Z76 <i>Behavioural ecology and population biology</i> | 10 | H |
| AM3Z77 <i>Research topics in aquatic ecology</i> | 10 | H |
| AM3Z78 <i>Biology of spiders</i> | 10 | H |
| PS3BC7 <i>Conservation and biodiversity</i> | 10 | H |
| PS3BD7 <i>Physiological ecology</i> | 10 | H |
| PS3BC8 <i>Palynology</i> | 10 | H |

Progression requirements

To proceed to Part 2 it is sufficient to have obtained at least 40% in all modules averaged together and have no module mark below 30%. However, module marks equivalent to 20 credits may be condoned if the student has attempted the examination and shown reasonable diligence in attending the modules.

To proceed from Part 2 to Part 3 it is sufficient to obtain an overall average of at least 40% and have no module mark below 30%. However, module marks equivalent to 20 credits may be condoned if the student has attempted the examination and shown reasonable diligence in attending the modules.

Summary of teaching and assessment

Teaching is organised in modules. Teaching in Part 1 consists of lectures and practical classes. Modules can be assessed by 100% coursework but more usually are assessed by a combination of coursework (20%) and formal examination (80%).

In Parts 2 and 3, lectures and practical classes continue to be important modes of teaching but they are increasingly supplemented by seminars, group work and field studies, including two Field Courses. Modules can be 100% in-course assessed but are more usually assessed by a combination of coursework (30%) and formal examination (70%). Part 2 contributes one third of the overall assessment and Part 3 the remaining two thirds. In order to be eligible for Honours, students must gain at least

40% in all Part 3 examinations averaged together and must gain at least 40% in the Project module.

The assessment is carried out within the University's degree classification scheme, details of which are in the programme handbooks.

Admission requirements

Entrants to this programme are normally required to have obtained:

UCAS Tariff: 260 points from no more than 4 AL or AS subjects including C in at least two AL science subjects, plus Mathematics, Double Science and English at Grade B at GCSE level.

International Baccalaureat: 30 points

Scottish Highers BBBB(Biology B)

Irish Leaving Certificate: BBBBC (Biology B)

GNVQ is accepted and mature students are also encouraged to apply

Admissions Tutor: Dr J.D. Ross

Support for students and their learning

University support for students and their learning falls into two categories. 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 4,000 current periodicals, has a range of electronic sources of information and houses 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, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Students' Union.

In addition to the above, the School of Animal and Microbial Sciences and the School of Plant Sciences have several well-equipped teaching laboratories and dedicated computer laboratories providing students with in-house access to on-line educational material. The AMS also houses an extensive Zoological museum and collection, while SPS has a herbarium, living collection and botanic garden. These provide rich sources of material and specimens that are incorporated into several modules.

Career prospects

Reading Environmental Biology graduates are eligible for membership of the Institute of Biology and can achieve Chartered Biologist status. They are qualified to enter a variety of careers in the biological sciences, including work in industry (pharmaceuticals, biomedical, agrochemicals environmental assessment), government service (research institutes and bodies such as the Environment Agency) and other public bodies (local conservation units, animal charities). As numerate scientists they also enter a wide variety of commercial and business occupations.

Opportunities for study abroad

Students can take part in the Erasmus exchange programme in which they can spend the first term of Part 3 studying in a variety of other European Universities. Recent

exchanges have taken place with the Universities of Bergen, Cork, Crete, Montpellier, Rostock, Tours, Uppsala and Zaragoza.

Educational aims of the programme

The BSc in Environmental Biology is concerned especially with the diversity of living organisms and their natural habitats. It includes study of the biology of all types of organisms, from microorganisms to flowering plants and mammals, at a level ranging from the molecular, biochemical and cellular to the physiological, environmental and ecological. The subject matter of Parts 1 and 2 is broadly based with specialisation in Part 3 to provide a coherent, in-depth area of study which the student will select. Students are expected to gain a broad understanding of the concepts underpinning biological sciences and to demonstrate the ability to complete a detailed study in an appropriate area and carry out an independent research project.

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. The basic principles underlying the biological sciences
2. The variety of groups of living organisms, from viruses and bacteria to complex multicellular organisms such as mammals and flowering plants
3. Different levels of biological organisation of living organisms, from the molecular, biochemical and cellular to the physiological, environmental and ecological
4. In depth understanding of least one specialist field in their research project.

Teaching/learning methods and strategies

Compulsory and optional modules in Parts 1 and 2 introduce students to the diversity of living organisms and their habitats at a variety of levels. A wide range of teaching strategies is employed in these modules, initially in relatively large-group lecture and practical sessions in Part 1. Smaller group teaching comes to dominate in Parts 2 and 3 and includes, depending on the modules chosen, additional teaching methods such as seminars, fieldwork and discussion sessions. Students will also have the option of attending full-time field courses during the vacations. In Part 3 students will be able to select a specific area of biology for in-depth study and will undertake a research project with one-to-one supervision by a member of academic staff or equivalent.

Assessment

Knowledge and understanding gained in the majority of modules will be assessed by a combination of coursework and formal examination. Some modules, for example field courses, will be assessed by 100% coursework. The project undertaken in Part 3 will be assessed primarily by written report.

Skills and other attributes

B. Intellectual skills – able to:

1. Address problems in a logical and structured manner
2. Manipulate and analyse numerical data
3. Construct and test hypotheses
4. Critically evaluate scientific literature and data

Teaching/learning methods and strategies

Basic skills associated with problem solving and data analysis are taught in a specific module using a variety of teaching methods. These skills are further developed in individual modules, for example on Field Courses, students in small groups will be taught how to construct and logically investigate a hypothesis and to analyse the data produced. In Part 3 students are able to enhance their critical and analytical skills by undertaking a project and to demonstrate this by presenting the results in an accompanying dissertation.

Assessment

Assessment of 1 and 2 is by examination. Critical evaluation of scientific data and literature is assessed in essay and dissertation form.

C. Practical skills – able to:

1. Conduct practical laboratory and/or fieldwork safely and successfully.
2. Design and undertake a programme of scientific investigation

Teaching/learning methods and strategies

Practical laboratory skills will be taught in Departmental teaching laboratories while fieldwork forms an integral part of several modules and is specifically taught on Field Courses. Further practical and field skills may also form part of the Part 3 project, where students will be taught on a one-to-one basis how to design and implement a programme of scientific investigation.

Assessment

Skill 1 is typically assessed by course work, while skill 2 is assessed by written report.

D. Transferable skills :

1. To be able to communicate effectively in both written and oral form
2. To be numerate and capable of approaching problems in a logical and structured manner
3. To be able to operate effectively as part of a team
4. To be familiar with IT operation and resources
5. To be able to work independently
6. To be able to effectively plan and time manage projects

Teaching/learning methods and strategies

A combination of seminars, demonstrations and practical approaches. In addition, other modules include aspects of different skills, for example Field Courses include teamworking as part of structured group work and many modules include an integral component of written and oral communication as coursework. In Part 3 students undertake a detailed independent project during which their individual planning and time management skills are developed through contact with their academic supervisor.

Assessment

Numeracy and Problem Solving are assessed by specific exam. Other skills are assessed by coursework. In addition, most individual modules include written and oral coursework as 30% of the total module assessment.

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 expect 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 module and programme handbooks.