

BSc Botany and Zoology **For students entering Part 1 in October 2004**

UCAS code: CC23

Awarding Institution:
Teaching Institution:
Relevant QAA subject benchmarking group(s):
Faculty of Life Sciences

The University of Reading
The University of Reading
Bioscience
Programme length: 3 years
Date of specification: 26 May 2006

Programme Director: Dr. J.A. Hawkins
Programme Adviser: Dr. J.D. Ross
Board of Studies: Botany and Botany & Zoology
Accreditation: None

Summary of programme aims

The programme aims to provide a thorough, degree-level education in the main areas of Botany and Zoology. It encompasses traditional studies of whole organism biology with a consideration of recent advances in areas such as biotechnology, biodiversity and genetics. It is designed to cater for students whose career aspirations can best be advanced by in-depth knowledge about both plants and animals, e.g. those intending to pursue careers in school teaching or conservation.

Transferable skills

The University's Strategy for Teaching and Learning has identified a number of generic transferable skills that 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. There is also an opportunity for language study.

Programme content

The programme that follows lists those modules that must be taken (compulsory modules). Students are required to choose additional modules, in consultation with their Programme Adviser, to make 120 credits in each Part. Additional modules will normally be selected from those offered by Plant Science, AMS, Geography or Soil Science. However, students lacking A-level Chemistry or an equivalent qualification must take *Chemistry for biologists* (BI1S10) in Part 1. In Part 2 the additional modules may include language modules offered by IWLP. In Parts 2 and 3, the additional modules should be drawn principally from Plant Science and AMS, and should involve approximately the same numbers of credits from each. **Please note: The additional modules must include two field courses, one in botany and one in zoology. Students may include a third field course if they wish.** The modules offered by Plant Science and AMS from which additional modules may be selected are listed below as optional modules.

Part 1 (three terms)

Compulsory modules (90 credits)

| Module | Title | Credits | Level |
|---------------|----------------------------------|----------------|--------------|
| PS1BA1 | Plant world | 10 | C |
| PS1BA2 | Plant physiology and development | 10 | C |
| BI1C10 | Cell biology and biochemistry | 10 | C |
| BI1M10 | Biodiversity | 10 | C |
| AM1C12 | Animal physiology | 10 | C |
| AM1Z10 | The whole mammal | 10 | C |
| BI1C11 | Genetics and molecular biology | 10 | C |

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| BI1Z10 | Ecology | 10 | C |
| BI1Z11 | Community ecology | 10 | C |

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

| Module | Title | Credits | Level |
|--------|--------------------------|---------|-------|
| BI1S10 | Chemistry for biologists | 10 | C |

Optional modules (to make 120 credits in total)

| Module | Title | Credits | Level |
|--------|---------------------------------------|---------|-------|
| PS1BB1 | Current topics in plant biology | 10 | C |
| AM1M11 | Microbiology 1 | 10 | C |
| AM1C13 | Digestion and nutrition | 10 | C |
| AM1C14 | Biochemistry and metabolism | 10 | C |
| AM1M12 | Important microbes | 10 | C |
| BI1S11 | Concepts and skills 1 | 10 | C |
| AP1A11 | Biology and production of crop plants | 10 | C |
| PS1AB2 | Physical ecology | 10 | C |

Or elsewhere from the programmes of other Schools subject to the agreement of the Programme Advisor.

After Part 1 exams, students will prepare for either *Botany Part II field course* (PS2BF3, and the pre-requisite PS2BG3), or for the *Zoology field course* (AM2Z38), which will take place in the summer vacation but which will be recorded as Part 2 modules.

Part 2 (three terms)

Compulsory modules (50 credits)

| Module | Title | Credits | Level |
|--------|--|---------|-------|
| PS2BF3 | Botany Part 2 field course (students are recommended to take PS2BG3 below) OR | 10 | I |
| AM2Z38 | Field course | 10 | I |
| PS2AC4 | Career management and transferable skills OR | 10 | I |
| AM2S31 | Concepts and skills 2, including group projects | 10 | I |
| PS2BB4 | Evolution of plant biodiversity | 10 | I |
| AM2Z32 | Vertebrate zoology OR | 10 | I |
| AM2Z34 | Invertebrate zoology | 10 | I |
| AS2A1 | Statistics for life sciences | 10 | I |

Optional modules (at least 30 credits from PS and 30 credits from AM modules)

| Module | Title | Credits | Level |
|--------|--|---------|-------|
| PS2AA5 | Plant genetics | 10 | I |
| PS2AB4 | Weed biology and control | 10 | I |
| PS2AB5 | Crop pests and integrated crop protection | 10 | I |
| PS2BC5 | Ecological aspects of environmental assessment | 10 | I |
| PS2BD4 | Plants and the environment | 10 | I |
| PS2BE5 | Ecological biochemistry | 10 | I |
| PS2BG3 | Flora of the British Isles | 10 | I |

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| PS2HD4 | Crop disease and its control | 10 | I |
| PS2NA4 | Introduction to the history and philosophy of science | 10 | I |
| BI2B31 | Macroevolution | 10 | I |
| BI2Z31 | Microevolution | 10 | I |
| AM2Z32 | Vertebrate zoology | 10 | I |
| AM2Z33 | Animal behaviour | 10 | I |
| AM2Z34 | Invertebrate zoology | 10 | I |
| AM2Z35 | Immunology | 10 | I |
| AM2Z37 | Aquatic biology | 10 | I |
| AM2Z40 | Small animal management | 10 | I |
| AM2Z41 | Applied ecology | 10 | I |
| AP2A26 | Forestry and woodlands | 10 | I |
| | Institution wide language programme | 10 | C/1 |

Part 3 (three terms)

Compulsory modules (70 or 80 credits)

| Module | Title | Credits | Level |
|--------|--|---------|-------|
| PS3BF8 | Mediterranean botany Part 3 field course (If have done zoology field course in Part 2) OR | 20 | H |
| AM2Z38 | Zoology field course (If have done botany field course in Part 2): <i>NB: only 20 Part 2 credits are allowed in Part 3</i> | 10 | H |
| PS3BAX | Botany research project OR | 40 | H |
| AM3S75 | Project | 40 | H |
| AM3Z79 | Animal diversity | 10 | H |
| PS3BH8 | Botany research skills | 10 | H |

Optional modules (40 or 50 credits: at least 20 credits from AM and 20 credits from PS modules)

| Module | Title | Credits | Level |
|--------|--|---------|-------|
| PS3AB7 | Crops and climate | 10 | H |
| PS3AF8 | Plant tissue culture | 10 | H |
| PS3AG8 | Weed ecology | 10 | H |
| PS3BA8 | Biodiversity assessment and the sustainable use of plant resources | 10 | H |
| PS3BB8 | Creating revisions, monographs, floras and information systems | 10 | H |
| PS3BC7 | Conservation and biodiversity | 10 | H |
| PS3BD7 | Physiological ecology | 10 | H |
| PS3BE8 | Biodiversity informatics | 10 | H |
| PS3BF8 | Botany Part 3 field course | 10 | H |
| PS3BG7 | Diversity and identification of plants | 20 | H |
| PS3HH8 | Plant developmental genetics and physiology | 10 | H |
| AP3A49 | Seed science and technology | 10 | H |
| AM3Z72 | Insects and society | 10 | H |
| AM3Z74 | Conservation biology | 10 | H |
| AM3Z75 | Evolutionary genetics and phylogeny | 10 | H |
| AM3Z76 | Behavioural ecology and life history theory | 10 | H |
| AM3Z77 | Research topics in ecology | 10 | H |

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| AM3Z80 | Marine biology field course | 10 | H |
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Progression requirements

Part 1

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.

Part 2

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.

Summary of teaching and assessment

Teaching is organised in modules. Teaching in Part 1 consists of lectures and practical classes. Some modules are assessed by 100% coursework but most are assessed by a combination of coursework (30%) and formal examination (70%).

In Part 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 an overall weighted average of 40% 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 4AL 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.A. Hawkins

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 collections and botanic garden. These provide rich sources of material and specimens that are incorporated into several modules.

Career prospects

Recent graduates have followed a diversity of careers in academia, in research institutions, in school teaching, in conservation and in biologically related commercial sector activities.

Opportunities for study abroad or for placements

A number of students have spent parts of their final year studying in European universities through the Socrates programme, and it is anticipated that such exchanges will continue.

Educational aims of the programme

The programme aims to provide a thorough, degree-level education in Botany and Zoology, enabling graduates to capitalise on the range of career opportunities outlined above under Career Prospects.

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

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| <p>A. Knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. The fundamental concepts of biology and their application to botanical and zoological systems. 2. The range of animal and plant diversity. 3. Selected aspects of animal and plant diversity in terms of structure, function and environmental relationships. 4. Statistics as applied to biological data. 5. A selection of more specialised optional topics. | → | <p>Teaching/learning methods and strategies</p> <p>These topics are presented in formal lectures combined with laboratory based practical classes and fieldwork, including residential field courses.</p> <p>Tutorial sessions are incorporated into some modules to support the formal teaching. Smaller group teaching is more common in Parts 2 and 3.</p> <p>In Part 3 students will be able to select more specific areas for in-depth study and will also undertake a research project with one-to-one supervision by a member of academic staff.</p> <p>Throughout the course, students are encouraged to discuss with their lecturers any points where the students' understanding is perceived as weak.</p> <p><i>Assessment</i></p> <p>Most knowledge is tested through a combination of coursework and unseen formal examinations. Some modules will be 100% assessed by coursework (e.g. field courses) or by a written report (e.g. research project). The coursework also serves to provide feedback on student progress.</p> |
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Skills and other attributes

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| <p>B. Intellectual skills – able to:</p> <ol style="list-style-type: none">1. Think logically and organise tasks into a structured form.2. Assimilate knowledge and ideas based on wider reading and through the internet.3. Transfer appropriate knowledge and methods from one topic to another (both previously experienced and novel) within the overall subject area.4. Understand the evolving state of knowledge in the rapidly developing science of biology.5. Understand the analysis of numerical data as applied to biology.6. Construct and test hypotheses.7. Plan and conduct and write a report on an independent project. | <p>Teaching/learning methods and strategies</p> <p>Elements of the coursework are specifically designed to stimulate learning and reinforcement of the skills outlined under 1-5. Skill 5 ties in with practical skill 5. Students learn skills 6-7 in certain modules such as the field courses. The Part 3 research project develops an ability for independent research (skills 6-7) as well as reinforcing many of the other intellectual skills.</p> <p><i>Assessment</i></p> <p>Skills 1-4 are essential to permit the student to perform well in most modules of coursework and in examinations, including the integrating paper of the final examinations. Skill 5 is important in field course and other practical reports. All skills are tested to varying extents by the Part 3 research project presentation.</p> |
| <p>C. Practical skills</p> <p>Both in relation to botanical and zoological studies, to be able to:</p> <ol style="list-style-type: none">1. Carry out practical work with minimal risk (both to self and to others).2. Undertake laboratory tasks and techniques.3. Undertake fieldwork tasks and techniques.4. Design and undertake a programme of scientific investigation.5. Analyse data using appropriate statistical methods, including by computer. | <p>Teaching/learning methods and strategies</p> <p>Skills 1-3 are acquired during formal practical classes, both in the laboratory and the field. Mini projects during field courses will introduce skills 4-5. Statistical analysis of data is incorporated into appropriate practical classes and is also required for projects.</p> <p>The design, conduct and completion of the research project in Part 3 brings together and reinforces these practical skills.</p> <p><i>Assessment</i></p> <p>By practical laboratory and fieldwork reports and in the finals practical examinations. These skills are essential to permit the student to perform well in coursework including the Part 3 research project.</p> |

D. Transferable skills – able to:

1. Use IT.
2. Communicate scientific ideas by a variety of methods including in writing, orally and by the use of posters.
3. Use library resources both paper and electronic.
4. Manage time.
5. To work independently.
6. Work as part of a team.
7. Plan a career.

Teaching/learning methods and strategies

The use of IT and other skills is embedded throughout the programme and is a major and essential element of some modules.

Teamwork (6) and time management (4) are both essential elements of mini projects during field courses. The research project is likely to require application of skills 1-5. Students are encouraged to discuss future careers with personal tutors, other relevant staff and members of the Careers Advisory Service.

Assessment

The skills 1-6 will enhance to performance of students in coursework, in the research project and in unseen examinations, including in Part 3 practical examinations.

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