

PROGRAMME SPECIFICATION

This document describes the **Honours Degree programme in Ecology and the Environment**. This specification is valid for new entrants from **September 2012**.

The aims of the Honours Degree programme in Ecology and the Environment are to:

- provide sound knowledge and understanding of the organismal, environmental and molecular principles of the subject through a core of courses, and develop an insight into the current frontiers of knowledge, primarily through a series of specialised level 3 courses many of which focus on ecology, conservation and the environment;
- develop, through a flexible and progressive structure, a range of subject-specific and transferable skills, including practical laboratory skills, fieldwork skills, self-management, information retrieval, communication and presentation skills, working with others, decision making and meeting deadlines, that equip students for future employment;
- provide experience of independent research through a final year project that focuses on ecology;
- produce graduates who can work safely and responsibly with biological materials, laboratory equipment and in the field.

The programme is delivered in three stages, each of which comprises one year of full-time study during which the student must follow courses to the value of four units (one unit is roughly equivalent to 30 national credits). The curriculum is based around a core of mandatory units running through all three stages providing a broad base of biology in stage one, essential training in systematic and quantitative biology and ecological studies in stage two and a study of evolutionary processes, ecosystems and an individual project in the final stage.

Stage one comprises three core courses, plus one option and seeks to provide the necessary grounding for the study of the subject at degree level. Students have a choice between a slightly more organismal approach (by including some microbiology) or a slightly more molecular approach (by including some biochemistry). These courses consider major themes of biological diversity, ecological concepts, genetics, cell biology and physiology. In **Stage two** students take a total of 5 core courses to the value of 2½ units and choose 3 courses from organismal options available. These take the students beyond the basic foundations laid in stage one and the choices available enable students to specialise. **Stage three** allows for increasing specialisation as students take 3 core courses to the value of 2 units and choose 4 courses from organismal options available. Most of these courses closely reflect the research interests of members of staff who are all specialists in their fields. Students also complete an individual research project providing training in a specialised research area and also in generic skills such as literature searching, report writing, use of word processing, graphics and statistics and in independent work. Students can also take up to 1 course unit outside the School of Biological Sciences, but within the Faculty of Science, during their stage two/three. Options are selected in consultation with the student's advisor.

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This document provides a summary of the main features of the programme(s), and of the outcomes which a student might reasonably be expected to achieve if full advantage is taken of the learning opportunities provided. Further information is contained in the College prospectus, the College Regulations and in various handbooks issued to students upon arrival. Whilst Royal Holloway keeps all its information for prospective applicants and students under review, programmes and the availability of individual courses are necessarily subject to change at any time, and prospective applicants are therefore advised to seek

confirmation of any factors which might affect their decision to follow a specific programme. In turn, Royal Holloway will inform applicants and students as soon as is practicable of any substantial changes which might affect their studies.

Learning outcomes

Teaching and learning in the programme are closely informed by current developments (including practical aspects) in the subject and by the active research of staff, particularly in the areas of animal behaviour, biodiversity, conservation, ecology and the environment and evolution. In general terms the programme provides a variety of opportunities for students to develop and demonstrate these learning outcomes:

Knowledge and understanding

- a critical understanding of the diversity and complexity of life and life processes;
- a familiarity with terminology, nomenclature and classification systems;
- a knowledge of the physiology, and molecular and cellular basis of life processes;
- a critical understanding of ecological systems and of the interrelationships between organisms and the environment they live in focussing on population processes, dynamics and interactions; community structure development and biodiversity; ecological methodologies and data analyses; the impact of different approaches to species management and conservation; nutrient and energy flow through populations and communities;
- a critical understanding of genetics and of the evolutionary processes that give rise to the diversity and complexity of life;
- understanding cutting edge developments in a range of areas specific to the subject;
- knowledge and engagement with philosophical and ethical issues arising from some of the current developments in the biosciences;
- well-developed strategies for updating, maintaining and enhancing their knowledge of the Biosciences.

Skills and other attributes

- the ability to employ and evaluate suitable experimental methods (both laboratory and fieldwork based) for the investigation of relevant areas of biology;
- a range of laboratory and fieldwork techniques of key importance in biology;
- working safely in a scientific laboratory and in the field, with awareness of standard safety protocols;
- the ability to apply relevant numerical skills, including statistics to biological data;
- the ability to access bioscience information from a wide range of sources in order to maintain and enhance knowledge of the Biosciences and to communicate that information clearly in oral and written forms;
- assessing the merits of contrasting subject-specific theories, paradigms, concepts and principles;
- critically interpreting and evaluating experimental data and relevant literature, analysing and solving problems, and decision-making;*
- applying subject-specific knowledge and understanding to address familiar and unfamiliar problems;
- the ability to plan, design and execute an independent piece of research through a theoretical or practical project in environmental biology, including the production of the final report;
- taking personal responsibility for learning, and developing habits of reflection on that learning;*
- identifying, retrieving (including the use of online computer searches), sorting and exchanging information;*
- abstracting and synthesising information, and developing a reasoned argument;*
- written communication and verbal presentation;*
- information technology (including spreadsheets, databases, word processing, email and WWW);*
- interpersonal skills, including working in groups/teams and recognising and respecting the viewpoints of others;*
- CV and career preparation.*

* transferable skills

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Teaching, learning and assessment

The overall strategy is to provide a progressive approach to biological concepts and systems of increasing complexity through teaching methods that aid learning and stimulate interest. Teaching is mostly by means of lectures, laboratory and fieldwork classes, seminars, tutorials, study/revision sessions, with knowledge and understanding further developed by guided independent study. Learning and analytical ability are developed and reinforced through problem solving, essay writing, practical classes (both laboratory and fieldwork), critical evaluation and by giving students the opportunity to design, execute and evaluate their own experiments. Students are encouraged to acquire further knowledge beyond taught material, e.g. by reading topical reviews, original research literature and attending research seminars, especially in the final year.

The practical assignments associated with stage one and stage two courses provide training in a range of subject specific laboratory techniques, including safety assessment. The culmination of these skills is demonstrated in the stage three research project, and for literature skills the preparation of a literature report. Students have to prepare their own risk assessment prior to commencing their final year project work.

Training in intellectual and key transferable skills is embodied throughout the programme and forms a strong element of the tutorial and study session programmes. All students are required to meet basic standards in information technology, for which training is provided by the College Computer Centre, through the General Information Technology Skills course.

Assessment of knowledge and understanding is by formal examinations at the end of each year, practical assignments (both laboratory and fieldwork based) and other coursework, oral presentations and an independent research project and the independent literature report.

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Details of the programme structure(s)

Please note that the list of available courses offered is subject to change and not all courses run each year. Full details of each of the courses can be obtained from the [School](#).

Stage one:

Full-time students must take:

BS1040 The Diversity of Life (1 unit)

BS1050 Ecology: Animal Behaviour to Environmental Conservation (1 unit)

BS1060 Living Systems: Cell Biology and Physiology (1 unit)

BS1070 Genetics and Microbiology (1 unit)

Part time students must take:

Stage one (a):

BS1040 The Diversity of Life (1 unit)

BS1050 Ecology: Animal Behaviour to Environmental Conservation (1 unit)

Stage one (b):

BS1060 Living Systems: Cell Biology and Physiology (1 unit)

BS1070 Genetics and Microbiology (1 unit)

Stage two:

Full-time students must take:

BS2010 Invertebrate Biology: Structure, Behaviour and Evolution (½ unit)

BS2020 Plant life: from Genes to Environment (½ unit)

BS2090 Insects, Plants and Fungi: Ecology and Applications (½ unit)*

BS2110 Practical Field Ecology (½ unit)*

BS2120 Biological Data Analysis and Interpretation (½ unit)

and three options from the following:

BS2040 Cell Biology (½ unit)

BS2060 Developmental Biology (½ unit)

BS2140 Animal Behaviour (½ unit)
BS2150 Applications of Molecular Genetics in Biology (½ unit)
BS2001X Marine Biology (½ unit)*

Part-time students must take:

Stage two (a)

BS2010 Invertebrate Biology: Structure, Behaviour and Evolution (½ unit)
BS2020 Plant life: from Genes to Environment (½ unit)
BS2120 Biological Data Analysis and Interpretation (½ unit)
and choose options equal to the value of a half unit from the stage two courses listed above.

Stage two (b)

BS2090 Insects, Plants and Fungi: Ecology and Applications (½ unit)*
BS2110 Practical Field Ecology (½ unit)*
and choose options equal to the value of one unit from the stage two courses listed above.

Stage three:

Students must take:

BS3010 Individual Research Project (1 unit)
BS3120 Population and Community Ecology (½ unit)*
BS3140 Evolution (½ unit)

and choose four options from the following:

BS3020 Special Study: Dissertation # (½ unit)*
BS3030 Biology of Parasitic Diseases (½ unit)
BS3060 Conservation Biology (½ unit)*
BS3160 Behavioural Ecology (½ unit)*
BS3180 Marine Ecology and Biodiversity (½ unit)*
BS3190 Climate Change: Plants and the Environment (½ unit)*
BS3001X Marine Microbiology (½ unit)*

Part-time students must take:

Stage three (a)

BS3010 Individual Research Project (1 unit)
BS3120 Population and Community Ecology (½ unit)*
BS3140 Evolution (½ unit)

Stage three (b)

Students must choose options equal to the value of two units from the stage three courses listed above

Stages two (a) and (b) should include at least one option from BS2030* and BS2001X*

Stages three (a) and (b) should include at least two options (depending on how many *courses were passed in stages two (a) and (b)) from BS3020*; BS3060*; BS3160*; BS3180*; BS3190* and BS3001X*

* To qualify for the degree in Ecology and the Environment, students must pass 7 of the * courses by the end of their final year.

Dissertation topic must be environmental.

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Progression and award requirements

The progression and award requirements are essentially the same across all Honours Degree programmes at Royal Holloway. Students must pass courses to the value of at least three units on each stage of the programme. On some programmes there may be a requirement to pass specific courses in order to progress to the next stage, or to qualify for a particular degree title (see programme structure above). Students are considered for the award and classified on the basis of a weighted average. This is calculated from marks gained in courses taken in stages two and three, and gives twice the weighting to marks gained in stage three. In order to qualify for the award of Biochemistry degree, students must gain a weighted average of at least 35%, pass at least 3 Units in the final year and take the core courses specified above.

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Student support and guidance

- Personal Advisers: All students are allocated a Personal Adviser who meets with them regularly through the programme. The Personal Adviser's role is to advise on academic, pastoral and welfare issues, but with referral of students for professional help, e.g. counselling, if required. Students work closely with their Personal Advisers in tutorial groups of around 7, primarily throughout the teaching terms.
- The Director of Teaching and Academic Coordinators provide a back-up system of academic, pastoral and welfare advice.
- Provision of study skills sessions throughout the academic year focuses on enhancing generic study skills. The aim is to facilitate the transition of students to the University learning environment allowing them to perform to the best of their academic ability. Excellent associated online resources are also available through Moodle, the virtual learning environment, and on the Royal Holloway website.
- All staff are available and accessible through an open-door policy or by operating a defined office hours system, or by appointment.
- Representation on the Student-Staff Committee.
- Staff-undergraduate ratio of 1:15 (2009/10).
- Detailed student handbook and course resources.
- Extensive supporting materials and learning resources in College libraries, the Computer Centre and via the School website and Moodle.
- Dedicated School teaching laboratories are housed in the School of Biological Sciences (Bourne) Building.
- The School of Biological Sciences has two Education Support Office network members.
- College Careers Service and School Careers Liaison Officer, supplemented by a dedicated careers area.
- Access to all College and University support services, including Student Counselling Service, Health Centre and the Education Support Office for students with special needs.

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Admission requirements

The programme's standard conditional offer is normally at least 320 UCAS tariff points, with a standard A-Level offer of ABB (including A2 Biology) and at least a B in GCSE Mathematics. However, the Department also has considerable flexibility in its admissions and offers policy, and strongly encourages non-standard applicants. Applicants who have passed the Science Foundation Year Programme, including Biology and Chemistry (providing the A level requirements have not already been met in both of these subjects), are also accepted onto this degree programme. Overseas students whose first language is not English must also have a qualification in English Language at an appropriate level. For further details please refer to the [Prospective Students](#) web page. It may also be helpful to contact the [Admissions Office](#) for specific guidance on the entrance requirements for particular programmes.

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Further learning and career opportunities

Graduates from Biological Sciences degree programmes have successfully progressed into a wide range of professions, while many have continued onto Postgraduate studies. For further details please refer to the [Careers Service](#).

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Indicators of quality and standards

Royal Holloway's position as one of the UK's leading research-intensive institutions was confirmed by the results of the most recent Research Assessment Exercise (RAE 2008) conducted by the Higher Education Funding Council (HEFCE). The new scoring system for the RAE 2008 measures research quality in four categories, with the top score of 4* indicating quality that is world-leading and of the highest standards in terms of originality, significance and rigour. 60% of the College's research profile is rated as world-leading or internationally excellent outperforming the national average of 50%. The College is ranked 16th in the UK for research of 4* standard and 18th for 3* and 4* research. The School of Biological Sciences was ranked joint 3rd in the top 10 universities in the country in terms of proportion of 3* and 4* research, with 70% of its research profile being of 3* and 4* standard.

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List of programmes offered by the School of Biological Sciences

All the programmes are taught entirely by staff at Royal Holloway, University of London, and lead to awards of the University of London. Programmes in Biological Sciences are not subject to accreditation by a professional body. The QAA subject benchmark statement in Biosciences describes the general features which one might expect from Honours Degree programmes in the subject, and can therefore be used as a point of reference when reading this document (see www.qaa.ac.uk). UCAS codes are given in parentheses (see www.ucas.ac.uk).

Single Honours Degree programmes in Biological Sciences taught wholly within the School of Biological Sciences

BSc Biochemistry (C700)	Available Full Time or Part Time
BSc Biology (C100)	Available Full Time or Part Time
BSc Biomedical Sciences (B990)	Available Full Time or Part Time
BSc Ecology and Environment (C150)	Available Full Time or Part Time
BSc Medical Biochemistry (C741)	Available Full Time or Part Time
BSc Molecular Biology (C701)	Available Full Time or Part Time
BSc Zoology (C300)	Available Full Time or Part Time

Combined Honours Degree programme with Biological Sciences as a major component

BSc Biology with Psychology (C1C8)†

† Programme to be withdrawn with effect from September 2013

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