ROYAL HOLLOWAY
University of London

PROGRAMME SPECIFICATION

This document describes the **Honours Degree programme in Biology**. This specification is valid for new entrants from **September 2007.**

The aims of the Honours Degree programme in Biology are to:

- provide a sound knowledge and understanding of the organismal 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;
- 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;
- 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 equivalent to 30 national credits). The curriculum is based around a core of mandatory units running through all three years providing a broad base of biology in Stage one, essential training in systematic, quantitative and molecular biology in Stage two and a study of evolutionary processes and an individual project in Stage three.

Stage one comprises 3 core courses and seeks to provide grounding for the study of the subject at degree level. Students choose one option course, with a choice between a slightly more organismal approach (by including some microbiology) or a slightly more molecular approach (by including some biochemistry). These courses consist of lectures and practicals and consider major themes of biological diversity, ecological concepts, genetics, cell biology and physiology. Practicals provide training in a wide range of generic and subject-specific skills and are both laboratory- and field-based. In **Stage two**, students take 4 core courses to the value of 2 course units building on foundations laid in the first year and choose 4 of the organismal and molecular half-unit options available. These courses also provide a basis for research-led specialist options in stage three. **Stage three**, allows students to take 2 core courses to the value of 1½ course units and choose the remaining 5 half-unit courses from a list available options. 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, which provides training in a specialised research area and also in generic skills such as independent working, literature searching, report writing, use of word processing, graphics and statistics. Students can also take up to 1 course unit outside the School of Biological Sciences, but within the Faculty of Science during stage two or three. Options are selected in consultation with the student's advisor.

Further information

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, evolution, ,marine biology, physiology, plant and animal cell biology, and molecular biology. In general terms the programme provides a variety of opportunities for students to develop and demonstrate these learning outcomes:

Knowledge and understanding

- an understanding of the ecological, evolutionary, cellular, molecular and physiological principles that underlie life processes;
- a critical understanding of the diversity and complexity of life and life processes;
- a familiarity with terminology, nomenclature and classification systems;
- a critical understanding of ecological systems and of the interrelationships between organisms and the environment they live in;
- a critical understanding of genetics and of the evolutionary processes that give rise to the diversity and complexity of life;
- a knowledge and critical understanding of the appropriate experimental methods (both laboratory and fieldwork based) and strategies for the investigation of relevant areas of biology;
- 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;
- knowledge of the variety of sources of bioscience information and strategies for accessing these.

Skills and other attributes

- 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 information from a variety of sources in order to maintain and enhance knowledge of the Biosciences and to communicate the principles clearly in oral and written forms;
- assessing the merits of contrasting subject-specific theories, paradigms, concepts and principles;
- 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 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;*
- critically interpreting and evaluating experimental data and relevant literature, analysing and solving problems, and decision-making;*
- 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 first year and second year courses provide training in a range of subject specific laboratory techniques, including safety assessment. The culmination of these skills is demonstrated in the final year 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. Assessment of knowledge and understanding is typically by formal unseen written 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. Full details of the assessments for individual courses can be obtained from the School.

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Details of the programme structure(s)
Please note that not all courses run each year. A full list of courses including optional courses for the current academic year 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)

and 1 option from:
BS1070 Genetics and Microbiology (1unit)
BS1080 Genes, Proteins and Metabolism (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)

and 1 option from:
BS1070 Genetics and Microbiology (1unit)
BS1080 Genes, Proteins and Metabolism (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)
BS2120 Biological Data Analysis and Interpretation (½ unit)
BS2150 Applications of Molecular Genetics in Biology (½ unit)

and choose four options from the following Stage two courses:
BS2001X Marine Biology (½ unit)
BS2030 Plant Geography (½ unit)
BS2040 Cell Biology (½ unit)
BS2050 Essential Human Physiology in Health and Disease (½ unit)
BS2060 Developmental Biology (½ unit)
BS2090 Insects, Plants and Fungi: Ecology and Applications (½ unit)
BS2110 Practical Field Ecology (½ unit)

BS2140 Animal Behaviour (½ unit)
BS2530 Molecular Biology (½ unit)
BS2540 Molecular and Cellular Immunology (½ unit)
BS2550 Hormonal and Neuronal Signalling (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):
BS2150 Applications of Molecular Genetics in Biology (½ unit)
and choose options equal to the value of one and a half units from the Stage two courses listed above

Stage three:
Full-time students must take:
BS3010 Individual Research Project (1 unit)
BS3140 Evolution (½ unit)

and choose five options from the following Stage three courses:
BS3020 Special Study: Dissertation (½ unit)
BS3030 Biology of Parasitic Diseases (½ unit)
BS3060 Conservation Biology (½ unit)
BS3120 Population and Community Ecology (½ unit)
BS3130 Insect Physiology (½ unit)
BS3160 Behavioural Ecology (½ unit)
BS3180 Marine Ecology and Biodiversity (½ unit)
BS3190 Climate Change: Plants and the Environment (½ unit)
BS3530 Advanced Molecular Biology (½ unit)
BS3540 Cell and Molecular Biology of Cancer (½ unit)
BS3570 Human Embryology and Endocrinology(½ unit)
BS3580 Cell and Molecular Neuroscience (½ unit)
BS3001X Marine Microbiology (½ unit)

Part time students must take:
Stage three (a):
BS3010 Individual Research Project (1 unit)
BS3140 Evolution (½ unit)
and choose options equal to the value of a half unit from the Stage three courses listed above.
Stage three (b):
Choose options equal to the value of two full units from the Stage three courses listed above

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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 units 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 a Biology degree, students must gain a weighted average of at least 35% and complete the core units 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 Programme Directors provide a back-up system of academic, pastoral and welfare advice.
- Provision of study skills sessions both during the induction week and at appropriate times throughout the academic year for introduction to a range of specific study skills.
- All staff are available and accessible through an open-door policy or by operating a defined office hours system.
- Staff-undergraduate ratio of 1:15 (2009/10).
- Representation on the Student-Staff Committee.
- Detailed student handbook and course resources.
- A collection of articles and books supporting teaching and learning housed in the School Office.
- Extensive supporting materials and learning resources in College libraries, the Computer Centre, 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 2 Educational 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 Unit for students with special needs.

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Admission requirements

The Department's standard conditional offer is available on the Course Catalogue web page. However, the Department also has considerable flexibility in its admissions and offers policy and strongly encourages applications from non-standard applicants. Students whose first language is not English may also be asked for a qualification in English Language at an appropriate level. 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

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

BSc Biology (C100)	Available Full Time or Part Time

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