



UNIVERSITY OF LINCOLN

Programme Specification

Title:

Biology

Final Award: **Bachelor of Science with Honours (BSc (Hons))**

With Exit Awards at:

Certificate of Higher Education (CertHE)

Diploma of Higher Education (DipHE)

Bachelor of Science with Honours (BSc (Hons))

To be delivered from:

Level	Date
Level 1 or Certificate of Higher Education (CertHE)	2017-18
Level 2 or Diploma of Higher Education (DipHE)	2018-19
Level 3 or Bachelor of Science with Honours (BSc (Hons))	2019-20

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1. Introduction

This document describes one of the University of Lincoln's programmes using the protocols required by the UK National Qualifications Framework as defined in the publication *QAA guidelines for preparing programme specifications*.

This programme operates under the policy and regulatory frameworks of the University of Lincoln.

2. Basic Programme Data

Final Award:	Bachelor of Science with Honours (BSc (Hons))
Programme Title:	Biology
Exit Awards and Titles	Certificate of Higher Education (CertHE) Diploma of Higher Education (DipHE) Bachelor of Science with Honours (BSc (Hons))
Subject(s)	Biology
Mode(s) of delivery	Full Time
Is there a Placement or Exchange?	Yes
UCAS code	C100
Awarding Body	University of Lincoln
Campus(es)	Lincoln Campus
School(s)	School of Life Sciences
Programme Leader	Adrian Goodman (agoodman)
Relevant Subject Benchmark Statements	
Professional, Statutory or Regulatory Body Accreditation	
Programme Start Date	2017-18

3. Programme Description

3.1 Overview

This BSc (Hons) Biology is designed to meet the needs of students who want to gain knowledge and understanding of the breadth of modern biology within an academically challenging yet supportive research-led environment. Our aim is to produce confident, knowledgeable and questioning graduates with the skills and experience needed for a wide range of careers. This broad-based Biology programme builds on the success of the more specialist biosciences programmes currently offered within the University of Lincoln and includes teaching from ecology, agriculture, biochemistry, molecular biology, animal science, forensic and biomedical sciences. Students will be expected to integrate information and concepts from the breadth of biology, but will be given opportunities to develop specialist interests in their final year, as this will enhance their employability in certain sectors. Teaching and learning methods will include some conventional lectures and practical classes, which cover the core subject matter and technical skills, supported by tutorials and seminars which allow students to develop, analyse and present their own findings. Practical classes in laboratory and field allow students to practise project management and data gathering, handling and interpretation skills. All students will have the opportunity to conduct some original research in their final year research project, and will have opportunities to direct their curriculum at other points in the syllabus. A varied assessment diet has been designed to encourage and test the development of the skills and knowledge needed in their future careers. Students will be supported throughout their degree by a personal tutoring system.

3.2 Aims and Objectives

This programme aims to equip students with skills, knowledge and confidence necessary to pursue graduate careers in the biological sciences or other areas requiring graduates with strong analytical, communication and enquiry skills. This will be achieved by providing students with an educational framework in which they can develop their knowledge and understanding of the fundamental principles of biology in a context where skills development is encouraged and supported as an integral part of the academic experience. Students will be encouraged to learn independently and to pursue areas they find particularly interesting in an enquiry-based approach.

3.3 Variations to Standard Regulations and Guidance

None

4. Programme Outcomes

Programme-level learning outcomes are identified below.

Refer to *Appendix I – Curriculum Map* for details of how outcomes are deployed across the programme.

4.1 Knowledge and Understanding

On successful completion of this programme a student will have knowledge and understanding of:

- 1 Molecular Biology: describe the basic reactions of life and major molecules of life especially DNA, RNA and key proteins and understand the relevance of this information to every aspect of biology
- 2 Cells: Demonstrate an understanding of the structure and function of various types of cells in unicellular and multicellular organisms, the structure and function of cell membranes
- 3 Understanding of the key metabolic and catabolic reactions of plants and animals, and how they are controlled
- 4 Genetics: underpinning importance of genetics as the key to modern biology including the potential for genomics and other 'omics' technologies to advance our knowledge and provide solutions to problems
- 5 Evolution: understand the fundamental process of natural selection and why it is the major conceptual advance that allows us to understand life
- 6 Behaviour: as response of organism to external and internal stimuli but understood within the interdisciplinary context of evolution, cell biology, physiology and ecology
- 7 Growth and reproduction relate to genetics, physiology, including nutrition, and environment, and influence everything (from food production to environmental degradation to disease to evolution and more)!
- 8 Ecology and biodiversity: understand that all organisms live within and are adapted to the wider environment containing biotic and abiotic components, and that biodiversity is unevenly distributed. Understand the crucial role that diverse organisms play in regulating ecosystem functions and how these might be threatened by anthropogenic change
- 9 Biology is interdisciplinary and ever-changing – hypotheses can only ever be refined – and knowledge is rarely fixed
- 10 Change and scale – the world is changing and always has been – but scale and pace of anthropogenic scale is novel and has the potential to fundamentally change the biology of the planet
- 11 Demonstrate a thorough and critical knowledge of the primary literature and cutting-edge research questions in several areas of specialism as presented in final year modules.

4.2 Subject Specific Intellectual Skills

On successful completion of this programme a student will be able to:

- 12 Design, manage, monitor, present and analyse critically research project work

- 13 Formulate hypotheses and design appropriate experiments and projects to test them
- 14 Demonstrate an understanding of key ethical issues relating to modern biology
- 15 Acquire, evaluate, process, interpret and criticise information, conclusions and opinions from scientific publications and press and other media reports
- 16 Demonstrate the ability to think independently

4.3 Subject Specific Practical Skills

On successful completion of this programme a student will be able to:

- 17 Work safely and effectively in the field, in laboratories and in animal facilities
- 18 Demonstrate competence in handling and statistical analysis of data gained from practical work

4.4 Transferable Skills and Attributes

On successful completion of this programme a student will be able to:

- 19 Clear oral and written communication of scientific information to audiences with different levels of background knowledge
- 20 Numeracy and ability to apply numeracy skills to a wide range of situations, including abstract application of simple mathematical models
- 21 Competence in relevant information technology as needed for career path and confident about own ability to learn new IT skills within a rapidly changing environment
- 22 Problem solving and critical analysis of own work, with effective personal time management
- 23 Team-work and working with others on projects, including demonstrating leadership as appropriate
- 24 Positive and effective strategies to support life-long learning
- 25 Confidence and self-awareness and ability to evaluate own strengths and weaknesses in the context of particular career choices

For details of each module contributing to the programme, please consult the module specification document.

5. Learning, Teaching and Assessment Strategies

5.1. Learning and Teaching Strategy

The programme ensures compliance with the Framework for Higher Education Qualifications in the following ways (quotations are from www.qaa.ac.uk/academicinfrastructure/FHEQ/EWNI/default.asp):

Those completing their studies at Certificate or Intermediate levels will have acquired, respectively, “sound knowledge of the basic concepts” and “sound understanding of the principles” of Biology. Honours graduands “will have developed an understanding of a complex body of knowledge, some of it at the boundaries [of the subject area]”. The syllabus aims to provide this knowledge, capitalising upon the research activity of the teaching staff. The syllabus is also designed to develop the “analytical techniques and problem-solving skills” relevant to graduate-level employment. The curriculum is designed to enable students to demonstrate the attributes tabulated in Annex 1 of the Framework text.

Learning and Teaching Strategy:

The overarching strategy for learning and teaching at the University of Lincoln is that of Student as Producer. Students are encouraged to see themselves as producers of knowledge and collaborators in their learning experience. This is particularly emphasised in students’ practical classes which are designed to develop their research skills via enquiry based learning. Electronically delivered module support and assessment will be a key additional tool to help develop the student learning experience. This ethos should be experienced throughout the Biology Degree programme but will be particularly stressed in a number of key modules including Integrative Biochemistry, Medical and Veterinary Microbiology, Research Methods for Life Scientists, Ecology, Plant-Animal Interactions, Overseas Field Course, Current Issues in Life Sciences and Life Sciences Research Project.

Lectures introduce key topics in the subject area and guide students’ independent study. Practicals will allow students to develop laboratory skills and skills in fieldwork, surveying, data handling and processing, as well as to encounter at first hand the principles introduced in the lectures. Students will also have opportunity to develop their own interests through self-guided research skills, as library based study and background research and project work. Seminars and small group tutorials will be used to facilitate class discussion. There will be site visits and lectures by external specialists to provide opportunities to meet employed biologists and employers of biologists. Reference will be made to the practical application of principles and the development of graduate skills will be included in subject specific units.

Students on the biology programme will be allocated to a personal academic tutor who will support them throughout their studies. This person will guide them during timetabled tutorials in the first year module Research Methods for Life Scientists, ensuring they develop sound study practice from their first term at Lincoln. Their academic tutor will be available for advice (including pastoral advice) and guidance at all key academic decision points during the degree and help them to develop a career plan based on the skills and attributes they have acquired during their degree.

For details of each module contributing to the programme, please consult the module specification document. For award of the title BSc (Hons) Biology (Sandwich) a 48 week placement would be completed between Intermediate and Honours level.

If a student were to withdraw, leave or be terminated from any work placement that the University recognises as constituting a year out within industry, then the respective student is expected to provide an alternative means to support themselves until their return to the University at the start of

the next academic year. The University holds no responsibility in finding or providing an additional placement nor living costs associated with the withdrawal or loss of any industrial work placements. Moreover, a student who fails to successfully complete the placement could still achieve a BSc (Hons) in their programme of study if continuing (and successful in completing) their final year. Alternatively a student may opt to exit the programme leaving with the appropriate exit award for the subject.

5.2. Assessment Strategy

Assessment is varied to allow for the development and testing of all the skills listed as programme outcomes as well as the relevant knowledge and will include unseen examinations and coursework. Coursework will include laboratory exercises or reports, case studies, problem solving exercises, essays, poster or oral group presentations, short answer and structured questions and project reports.

All assessment will have a formative element as well as a summative element and feedback will be prompt and designed to enhance student skills. Assessment criteria will be made clear to students when the assignment is allocated at the start of the term in which the module is taught.

The use of technology is embedded within the learning process via our Virtual Learning Environment, Blackboard. Student electronic communities are used to facilitate communication and wikis are used to encourage students to develop their own shared learning resources.

6. Programme Structure

The total number of credit points required for the achievement of Certificate of Higher Education (CertHE) is 120.

The total number of credit points required for the achievement of Diploma of Higher Education (DipHE) is 240.

The total number of credit points required for the achievement of Bachelor of Science with Honours (BSc (Hons)) is 360.

Level 1

Title	Credit Rating	Core / Optional
Cell Biology 2017-18	15	Core
Evolution & Ecology 2017-18	15	Core
Integrative Biochemistry 2017-18	15	Core
Biochemistry and Metabolism 2017-18	15	Core
Research Methods for Life Scientists 1 2017-18	15	Core
Genetics 2017-18	15	Core
Animal Anatomy and Physiology 2017-18	15	Core
Plant Structure and Function 2017-18	15	Core

Level 2

Title	Credit Rating	Core / Optional
Molecular Biology 2018-19	15	Core
Research Methods for Life Scientists 2 2018-19	15	Core
Immunology 2018-19	15	Optional
Animal Behaviour 2018-19	15	Optional
Animal Management Systems 2018-19	15	Optional
Plant-Animal Interactions 2018-19	15	Core
Medical and Veterinary Microbiology 2018-19	15	Optional
Ecology 2018-19	15	Core
Reproduction and Development 2018-19	15	Optional
Work Experience 2018-19		Optional
Biomolecules 2018-19	15	Optional
Biology of Human Disease 2018-19	15	Optional
Biological Analysis 2018-19	15	Optional

Level 3

Title	Credit Rating	Core / Optional
Infection Sciences 2019-20	15	Optional
Conservation Biology 2019-20	15	Optional
Behavioural Ecology 2019-20	15	Optional
Overseas Field Course 2019-20	15	Optional
Genetics & Bioethics 2019-20	15	Optional
Forensic Biology 2019-20	15	Optional
Forensic Anthropology 2019-20	15	Optional
Population Genetics 2019-20	15	Optional
Current Issues in Life Sciences 2019-20	15	Core

Evolutionary Ecology 2019-20	15	Core
Life Sciences Research Project 2019-20	30	Core
Haematology 2019-20	15	Optional
Biotechnology 2019-20	15	Optional
Animal Cognition 2019-20	15	Optional
Palaeobiology 2019-20	15	Optional

Appendix I - Curriculum Map

This table indicates which modules assume responsibility for delivering and ordering particular programme learning outcomes.

Key: Delivered and Assessed Delivered Assessed

Level 1

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Animal Anatomy and Physiology 2017-18						✓	✓					
Biochemistry and Metabolism 2017-18	✓		✓									
Cell Biology 2017-18		✓										
Evolution & Ecology 2017-18					✓			✓				
Genetics 2017-18	✓			✓			✓					
Integrative Biochemistry 2017-18	✓		✓									
Plant Structure and Function 2017-18		✓	✓		✓			✓				
Research Methods for Life Scientists 1 2017-18												✓

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Animal Anatomy and Physiology 2017-18							✓					
Biochemistry and Metabolism 2017-18					✓		✓	✓				
Cell Biology 2017-18					✓		✓					
Evolution & Ecology 2017-18					✓		✓					
Genetics 2017-18					✓	✓	✓	✓				
Integrative Biochemistry 2017-18					✓		✓	✓				
Plant Structure and Function 2017-18							✓		✓			
Research Methods for Life Scientists 1 2017-18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	PO25
Animal Anatomy and Physiology 2017-18	

Biochemistry and Metabolism 2017-18	
Cell Biology 2017-18	
Evolution & Ecology 2017-18	
Genetics 2017-18	
Integrative Biochemistry 2017-18	
Plant Structure and Function 2017-18	
Research Methods for Life Scientists 1 2017-18	✓

Level 2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Animal Behaviour 2018-19						✓						
Animal Management Systems 2018-19							✓					
Biological Analysis 2018-19												
Biology of Human Disease 2018-19		✓	✓									
Biomolecules 2018-19	✓	✓	✓									
Ecology 2018-19					✓		✓	✓		✓		✓
Immunology 2018-19		✓	✓									
Medical and Veterinary Microbiology 2018-19		✓										
Molecular Biology 2018-19	✓			✓								
Plant-Animal Interactions 2018-19					✓	✓			✓			
Reproduction and Development 2018-19							✓					
Research Methods for Life Scientists 2 2018-19									✓			✓
Work Experience 2018-19												

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Animal Behaviour 2018-19						✓	✓	✓				
Animal Management Systems 2018-19		✓	✓				✓					
Biological Analysis 2018-19			✓		✓	✓	✓	✓		✓		
Biology of Human Disease 2018-19			✓				✓					

Biomolecules 2018-19									✓			
Ecology 2018-19					✓	✓	✓	✓				
Immunology 2018-19						✓	✓					
Medical and Veterinary Microbiology 2018-19					✓		✓					
Molecular Biology 2018-19							✓					
Plant-Animal Interactions 2018-19	✓			✓			✓					✓
Reproduction and Development 2018-19							✓					
Research Methods for Life Scientists 2 2018-19	✓	✓		✓		✓	✓	✓	✓			✓
Work Experience 2018-19												

PO25

Animal Behaviour 2018-19												
Animal Management Systems 2018-19												
Biological Analysis 2018-19												
Biology of Human Disease 2018-19												
Biomolecules 2018-19												
Ecology 2018-19												
Immunology 2018-19												
Medical and Veterinary Microbiology 2018-19												
Molecular Biology 2018-19												
Plant-Animal Interactions 2018-19												
Reproduction and Development 2018-19												
Research Methods for Life Scientists 2 2018-19												
Work Experience 2018-19												

Level 3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Animal Cognition 2019-20						✓				✓	✓	
Behavioural Ecology 2019-20					✓	✓		✓	✓			

Biotechnology 2019-20	✓										✓	✓
Conservation Biology 2019-20							✓	✓			✓	
Current Issues in Life Sciences 2019-20									✓	✓	✓	
Evolutionary Ecology 2019-20					✓			✓				
Forensic Anthropology 2019-20							✓		✓			
Forensic Biology 2019-20	✓			✓					✓			
Genetics & Bioethics 2019-20				✓	✓				✓			
Haematology 2019-20		✓	✓	✓								
Infection Sciences 2019-20		✓		✓			✓					
Life Sciences Research Project 2019-20									✓		✓	✓
Overseas Field Course 2019-20								✓	✓	✓	✓	✓
Palaeobiology 2019-20					✓	✓	✓	✓	✓	✓	✓	✓
Population Genetics 2019-20	✓				✓			✓				

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Animal Cognition 2019-20			✓				✓					
Behavioural Ecology 2019-20							✓					
Biotechnology 2019-20			✓			✓	✓					
Conservation Biology 2019-20							✓					
Current Issues in Life Sciences 2019-20			✓				✓			✓		
Evolutionary Ecology 2019-20							✓					
Forensic Anthropology 2019-20							✓					
Forensic Biology 2019-20							✓					
Genetics & Bioethics 2019-20		✓				✓	✓					
Haematology 2019-20			✓				✓			✓		
Infection Sciences 2019-20			✓				✓					
Life Sciences Research Project 2019-20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Overseas Field Course 2019-20	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Palaeobiology 2019-20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Population Genetics 2019-20							✓					

PO25

Animal Cognition 2019-20

Behavioural Ecology 2019-20	
Biotechnology 2019-20	
Conservation Biology 2019-20	
Current Issues in Life Sciences 2019-20	
Evolutionary Ecology 2019-20	
Forensic Anthropology 2019-20	
Forensic Biology 2019-20	
Genetics & Bioethics 2019-20	
Haematology 2019-20	
Infection Sciences 2019-20	
Life Sciences Research Project 2019-20	✓
Overseas Field Course 2019-20	
Palaeobiology 2019-20	
Population Genetics 2019-20	

Appendix II - Assessment Map

This table indicates the spread of assessment activity across the programme. Percentages indicate assessment weighting.

Level 1

	01	02	03	04	05	06	07	08	09	10	11	12
Animal Anatomy and Physiology 2017-18									50			
Biochemistry and Metabolism 2017-18												
Cell Biology 2017-18									50			
Evolution & Ecology 2017-18												
Genetics 2017-18												
Integrative Biochemistry 2017-18								50				
Plant Structure and Function 2017-18												
Research Methods for Life Scientists 1 2017-18										50		50

	13	14	15	16	17	18	19	20	21	22	23	24
Animal Anatomy and Physiology 2017-18		50										
Biochemistry and Metabolism 2017-18												50
Cell Biology 2017-18		50										
Evolution & Ecology 2017-18					50							50
Genetics 2017-18												50
Integrative Biochemistry 2017-18		50										
Plant Structure and Function 2017-18											50	50
Research Methods for Life Scientists 1 2017-18												

	25	26	27	28	29	30	31	32	33	34	35	36
Animal Anatomy and Physiology 2017-18												
Biochemistry and Metabolism 2017-18												
Cell Biology 2017-18												

Level 2

	01	02	03	04	05	06	07	08	09	10	11	12
Animal Behaviour 2018-19												
Animal Management Systems 2018-19						40						60
Biological Analysis 2018-19					50							
Biology of Human Disease 2018-19												
Biomolecules 2018-19							50					
Ecology 2018-19												
Immunology 2018-19												
Medical and Veterinary Microbiology 2018-19												
Molecular Biology 2018-19							50				50	
Plant-Animal Interactions 2018-19												
Reproduction and Development 2018-19												
Research Methods for Life Scientists 2 2018-19										50		50
Work Experience 2018-19												

	13	14	15	16	17	18	19	20	21	22	23	24
Animal Behaviour 2018-19						50						50
Animal Management Systems 2018-19												
Biological Analysis 2018-19				50								
Biology of Human Disease 2018-19						50						
Biomolecules 2018-19		50										
Ecology 2018-19									50			50
Immunology 2018-19							50					
Medical and Veterinary Microbiology 2018-19	50			50								
Molecular Biology 2018-19												
Plant-Animal Interactions 2018-19					50							50
Reproduction and Development 2018-19						50						50
Research Methods for Life Scientists 2 2018-19												

Work Experience 2018-19													
	25	26	27	28	29	30	31	32	33	34	35	36	
Animal Behaviour 2018-19													
Animal Management Systems 2018-19													
Biological Analysis 2018-19													
Biology of Human Disease 2018-19													
Biomolecules 2018-19													
Ecology 2018-19													
Immunology 2018-19													
Medical and Veterinary Microbiology 2018-19													
Molecular Biology 2018-19													
Plant-Animal Interactions 2018-19													
Reproduction and Development 2018-19													
Research Methods for Life Scientists 2 2018-19													
Work Experience 2018-19													
	37	38	39	40	41	42	43	44	45	46	47	48	
Animal Behaviour 2018-19													
Animal Management Systems 2018-19													
Biological Analysis 2018-19													
Biology of Human Disease 2018-19													
Biomolecules 2018-19													
Ecology 2018-19													
Immunology 2018-19													
Medical and Veterinary Microbiology 2018-19													
Molecular Biology 2018-19													
Plant-Animal Interactions 2018-19													
Reproduction and Development 2018-19													
Research Methods for Life Scientists 2 2018-19													
Work Experience 2018-19													

	49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)
Animal Behaviour 2018-19						
Animal Management Systems 2018-19						
Biological Analysis 2018-19						
Biology of Human Disease 2018-19						50
Biomolecules 2018-19						
Ecology 2018-19						
Immunology 2018-19						50
Medical and Veterinary Microbiology 2018-19						
Molecular Biology 2018-19						
Plant-Animal Interactions 2018-19						
Reproduction and Development 2018-19						
Research Methods for Life Scientists 2 2018-19						
Work Experience 2018-19						

Level 3

	01	02	03	04	05	06	07	08	09	10	11	12
Animal Cognition 2019-20						40						60
Behavioural Ecology 2019-20												
Biotechnology 2019-20												
Conservation Biology 2019-20			30				30			40		
Current Issues in Life Sciences 2019-20												
Evolutionary Ecology 2019-20								50				50
Forensic Anthropology 2019-20								50				50
Forensic Biology 2019-20												

Genetics & Bioethics 2019-20													100
Haematology 2019-20													50
Infection Sciences 2019-20													
Life Sciences Research Project 2019-20													
Overseas Field Course 2019-20	20												
Palaeobiology 2019-20													
Population Genetics 2019-20						50							
	13	14	15	16	17	18	19	20	21	22	23	24	
Animal Cognition 2019-20													
Behavioural Ecology 2019-20											40		
Biotechnology 2019-20											35		
Conservation Biology 2019-20													
Current Issues in Life Sciences 2019-20											50	50	
Evolutionary Ecology 2019-20													
Forensic Anthropology 2019-20													
Forensic Biology 2019-20										50		50	
Genetics & Bioethics 2019-20													
Haematology 2019-20				50									
Infection Sciences 2019-20									50				
Life Sciences Research Project 2019-20										75		25	
Overseas Field Course 2019-20				80									
Palaeobiology 2019-20													
Population Genetics 2019-20		50											
	25	26	27	28	29	30	31	32	33	34	35	36	
Animal Cognition 2019-20													
Behavioural Ecology 2019-20													
Biotechnology 2019-20							35	30					
Conservation Biology 2019-20													
Current Issues in Life Sciences 2019-20													
Evolutionary Ecology 2019-20													
Forensic Anthropology 2019-20													

Forensic Biology 2019-20													
Genetics & Bioethics 2019-20													
Haematology 2019-20													
Infection Sciences 2019-20													
Life Sciences Research Project 2019-20													
Overseas Field Course 2019-20													
Palaeobiology 2019-20							50						
Population Genetics 2019-20													
	37	38	39	40	41	42	43	44	45	46	47	48	
Animal Cognition 2019-20													
Behavioural Ecology 2019-20													
Biotechnology 2019-20													
Conservation Biology 2019-20													
Current Issues in Life Sciences 2019-20													
Evolutionary Ecology 2019-20													
Forensic Anthropology 2019-20													
Forensic Biology 2019-20													
Genetics & Bioethics 2019-20													
Haematology 2019-20													
Infection Sciences 2019-20													
Life Sciences Research Project 2019-20													
Overseas Field Course 2019-20													
Palaeobiology 2019-20													
Population Genetics 2019-20													
							49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)	
Animal Cognition 2019-20													
Behavioural Ecology 2019-20												60	

Biotechnology 2019-20						
Conservation Biology 2019-20						
Current Issues in Life Sciences 2019-20						
Evolutionary Ecology 2019-20						
Forensic Anthropology 2019-20						
Forensic Biology 2019-20						
Genetics & Bioethics 2019-20						
Haematology 2019-20						
Infection Sciences 2019-20						50
Life Sciences Research Project 2019-20						
Overseas Field Course 2019-20						
Palaeobiology 2019-20						50
Population Genetics 2019-20						

Appendix III - Benchmark Analysis

This table maps programme learning outcomes to relevant QAA subject benchmark statements or PSRB guidelines.

Knowledge and Understanding

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO1									
PO2									
PO3									
PO4									
PO5									
PO6									
PO7									
PO8									
PO9									
PO10									
PO11									

	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO1									
PO2									
PO3									
PO4									
PO5									
PO6									
PO7									
PO8									
PO9									
PO10									
PO11									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO1									
PO2									
PO3									
PO4									
PO5									
PO6									
PO7									
PO8									
PO9									
PO10									
PO11									

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36
PO1								✓	
PO2								✓	
PO3								✓	
PO4								✓	
PO5								✓	
PO6								✓	
PO7								✓	
PO8								✓	
PO9							✓	✓	
PO10								✓	
PO11								✓	

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO1			✓					✓	
PO2					✓	✓	✓		
PO3				✓				✓	
PO4					✓				
PO5					✓				
PO6									

PO7									
PO8							✓		
PO9									
PO10		✓							
PO11		✓			✓				

	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO1				✓					
PO2		✓	✓	✓			✓		
PO3		✓	✓	✓					
PO4				✓		✓			
PO5						✓	✓		
PO6					✓				
PO7		✓	✓	✓	✓			✓	
PO8		✓		✓	✓		✓	✓	✓
PO9									
PO10									
PO11									

	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO1									
PO2									
PO3									
PO4									
PO5									
PO6	✓								
PO7	✓								✓
PO8		✓	✓	✓	✓	✓	✓	✓	✓
PO9									
PO10									
PO11									

Biosci64

PO1	
PO2	
PO3	
PO4	
PO5	
PO6	
PO7	
PO8	✓
PO9	
PO10	
PO11	

Subject Specific Intellectual Skills

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO12									
PO13									
PO14									
PO15									
PO16									

	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO12									
PO13									
PO14									
PO15									
PO16									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO12									
PO13									

PO14									
PO15									
PO16									

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36
PO12								✓	
PO13									✓
PO14								✓	✓
PO15								✓	✓
PO16									

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO12								✓	✓
PO13	✓								
PO14									
PO15								✓	
PO16	✓								

	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO12									
PO13									
PO14									
PO15									
PO16									

	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO12									
PO13									
PO14									
PO15									
PO16									

Biosci64

PO12	
PO13	
PO14	
PO15	
PO16	

Subject Specific Practical Skills

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO17									
PO18									

	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO17									
PO18									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO17									
PO18									

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36
PO17								✓	✓
PO18							✓		

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO17									
PO18									

	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO17									
PO18									

	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO17									
PO18									

									Biosci64
PO17									
PO18									

Transferable Skills and Attributes

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO19									
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									

	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO19									
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO19									

PO20									
PO21									
PO22									
PO23									
PO24									
PO25									

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36
PO19							✓	✓	
PO20							✓		
PO21									
PO22									
PO23							✓	✓	✓
PO24									
PO25									

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO19									
PO20									
PO21	✓								
PO22	✓								
PO23									
PO24									
PO25		✓							

	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO19									
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									

	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO19									
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									

	Biosci64
PO19	
PO20	
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PO24	
PO25	

Appendix IV: Benchmark Benchmark Statement(s)

Biosci01 - *Be able to access bioscience information from a variety of sources and to communicate the principles in a manner appropriate to the programme of study.*

Biosci02 - *Have ability in a range of practical bioscience techniques, including data collection, analysis and interpretation of those data, and testing of hypotheses.*

Biosci03 - *Have an understanding of the explanation of biological phenomena at a variety of levels (from molecular to ecological systems) and be able to explain how evolutionary theory is relevant to their area of study.*

Biosci04 - *Be able to plan, execute and present an independent piece of hypothesis-driven work (eg a project) within a supported framework in which qualities such as time management, problem solving, and independence are evident.*

Biosci05 - *Have some understanding of ethical issues and the impact on society of advances in the biosciences.*

Biosci06 - *Be able to record data accurately, and to carry out basic manipulation of data (including qualitative data and some statistical analysis, when appropriate)*

Biosci07 - *Have developed basic strategies to enable them to update their knowledge of the biosciences.*

Biosci08 - *Be able to express relevant biological reactions in chemical terms.*

Biosci09 - *Understand how the chemistry and structure of the major biological macromolecules, including proteins and nucleic acids, determines their biological properties.*

Biosci10 - *Understand how the principles of genetics underlie much of the basis of modern molecular biology.*

Biosci11 - *Understand the main principles of gene expression.*

Biosci12 - *Know and understand the structure and function of various types of cells in unicellular and multicellular organisms, the structure and function of cell membranes, cell differentiation.*

Biosci13 - *Understand a range of appropriate and relevant experimental techniques and how they are used; and be able to perform some of them.*

Biosci14 - *Have a knowledge of cell metabolism, including the main anabolic and catabolic pathways.*

Biosci15 - *Have knowledge of enzyme structure and function and of some of the most important mechanisms controlling the action of enzymes and other proteins.*

Biosci16 - *Describe the structure, diversity and reproduction of the organisms studied.*

Biosci17 - *Describe basic organism structure and diversity.*

- Biosci18** - Describe mechanisms for the life processes and appreciate how the physiology of an organism fits it for its environment.
- Biosci19** - Show an appreciation of the integration of metabolism.
- Biosci20** - Show knowledge of the basic genetic principles relating to, and evolution of, the organisms studied.
- Biosci21** - Describe how organisms are classified and identified.
- Biosci22** - Appreciate the interactions of organisms with each other and the environment.
- Biosci23** - Describe the place of the organisms studied in the living world.
- Biosci24** - Appreciate the importance of the 'behaviour' of the organisms studied.
- Biosci25** - Demonstrate knowledge of biogeochemical cycles and pathways.
- Biosci26** - Describe and exemplify nutrient and energy flow through individuals, populations and communities.
- Biosci27** - Describe the structure, biogeography and diversity of ecosystems in relation to climate, geology, soils, palaeo-historical and evolutionary factors.
- Biosci28** - Describe and exemplify patterns of distribution of organisms in relation to biotic and abiotic factors.
- Biosci29** - Demonstrate knowledge of population processes, dynamics and interactions, and associated theoretical models.
- Biosci30** - Demonstrate knowledge of community structure, development, biodiversity, and associated theoretical models.
- Biosci31** - Demonstrate awareness of human interactions with natural populations and ecosystems, including habitat modification, pollution, exploitation and conservation.
- Biosci32** - Demonstrate awareness of the applied significance of species as resources and as damage-causing organisms.
- Biosci33** - Carry out routine investigations as instructed, using ecological methodologies and data analyses.
- Biosci34** - Be able to access and evaluate bioscience information from a variety of sources and to communicate the principles both orally and in writing (eg essays, laboratory reports) in a way that is well organised, topical and recognises the limits of...
- Biosci35** - Have ability in a broad range of appropriate practical techniques and skills relevant to the biosciences...

Biosci36 - *Be able to plan, execute and present an independent piece of work (eg a project), in which qualities such as time management, problem solving and independence are evident, as well interpretation and critical awareness of the quality of evidence.*

Biosci37 - *Be able to construct reasoned arguments to support their position on the ethical and social impact of advances in the biosciences be able to apply relevant advanced numerical skills (including statistical analysis, where appropriate) to biological...*

Biosci38 - *Have well-developed strategies for updating, maintaining and enhancing their knowledge of the biosciences.*

Biosci39 - *Be able to understand and explain the chemistry that underlies biochemical reactions and the techniques used to investigate them.*

Biosci40 - *Understand the principles that determine the three-dimensional structure of biological macromolecules and be able to explain detailed examples of how structure enables function.*

Biosci41 - *Acquire a critical understanding of the molecular basis of genetics and be able to explain some detailed examples.*

Biosci42 - *Have critical knowledge and understanding of gene expression, with a detailed knowledge of specific examples; the structure, arrangement, expression, and regulation of genes; and relevant experimental methods.*

Biosci43 - *Be familiar with a wide range of cells (both prokaryotic and eukaryotic) and be able to explain critically how their properties suit them for their biological function, and how they could be investigated experimentally.*

Biosci44 - *Be able to devise and evaluate suitable experimental methods for the investigation of relevant areas of biochemistry and molecular biology.*

Biosci45 - *Have a critical understanding of essential features of cell metabolism and its control, including topics such as energy and signal transduction, respiration and photosynthesis...*

Biosci46 - *Understand the chemical and thermodynamic principles underlying biological catalysis and the role of enzymes and other proteins in determining the function and fate of cells and organisms.*

Biosci47 - *Critically analyse the impact of external influences on growth and reproduction, and explain reproductive strategies.*

Biosci48 - *Critically recount the interactions of structure and metabolic function at cellular and organism level.*

Biosci49 - *Describe and critically evaluate the evidence for the mechanisms of life processes.*

Biosci50 - *Interpret the significance of internal and external influences on the integration of metabolism for survival and health.*

Biosci51 - *Describe and analyse patterns of inheritance and complex genetic interactions relating to the lives and evolution of the organisms studied.*

Biosci52 - *Enumerate the methods and principles underlying taxonomy and classification.*

Biosci53 - *Critically describe the principles and processes governing interactions of organisms and their environment.*

Biosci54 - *Critically analyse the contribution of the organisms to the biosphere.*

Biosci55 - *Critically assess the contribution of 'behavioural patterns' to survival and success.*

Biosci56 - *Demonstrate comprehension and intelligent engagement with biogeochemical cycles and pathways.*

Biosci57 - *Discuss and demonstrate comprehension of nutrient and energy flow through individuals, populations and communities.*

Biosci58 - *Demonstrate comprehension of the structure, biogeography and diversity of ecosystems in relation to climate, geology, soils, palaeo-historical and evolutionary factors.*

Biosci59 - *Discuss and critically analyse patterns of distribution of organisms in relation to biotic and abiotic factors.*

Biosci60 - *Demonstrate comprehension and critical analysis of population processes, dynamics and interactions, and associated models.*

Biosci61 - *Demonstrate comprehension and critical analysis of community structure, development, biodiversity, and associated models.*

Biosci62 - *Evaluate and critically analyse the effects of such human interactions on natural populations and ecosystems.*

Biosci63 - *Be capable of evaluating the impacts of harvesting resources, controlling pest/ pathogens and different approaches to species management.*

Biosci64 - *Apply critical understanding of ecological methodologies and data analyses.*