



# UNIVERSITY OF LINCOLN

## Programme Specification

Title:

### **Animal Behaviour and Welfare**

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: 1 Sep 2015

<b>Level</b>	<b>Date</b>
Level 1 or Certificate of Higher Education (CertHE)	2019-20
Level 2 or Diploma of Higher Education (DipHE)	2020-21
Level 3 or Bachelor of Science with Honours (BSc (Hons))	2021-22

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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

<b>Final Award:</b>	Bachelor of Science with Honours (BSc (Hons))
<b>Programme Title:</b>	Animal Behaviour and Welfare
<b>Exit Awards and Titles</b>	Certificate of Higher Education (CertHE) Diploma of Higher Education (DipHE) Bachelor of Science with Honours (BSc (Hons))
<b>Subject(s)</b>	Biological Sciences
<b>Mode(s) of delivery</b>	Full Time
<b>Is there a Placement or Exchange?</b>	Yes
<b>UCAS code</b>	D790
<b>Awarding Body</b>	University of Lincoln
<b>Campus(es)</b>	Lincoln Campus
<b>School(s)</b>	School of Life Sciences
<b>Programme Leader</b>	Jonathan Cooper (jcooper)
<b>Relevant Subject Benchmark Statements</b>	
<b>Professional, Statutory or Regulatory Body Accreditation</b>	
<b>Programme Start Date</b>	2019-20

## **3. Programme Description**

### **3.1 Overview**

This BSc (Hons) Animal Behaviour and Welfare programme is designed to meet the needs of students who want to gain knowledge and understanding of animal behaviour and welfare in the context 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 specialist animal behaviour programme is part of our successful portfolio of bio-science programmes currently offered within the University of Lincoln and includes teaching from biology, biochemistry, zoology, animal science, bio-veterinary and biomedical sciences. Students will be expected to integrate information and concepts from the breadth of animal behaviour and welfare, but will be given opportunities to develop specialist interests in their final year, as this will enhance their employment in animal based careers.

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 strong 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 animal science related topics or within the biological sciences in general, 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 animal behaviour science 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 Appreciate the complexity and diversity of life processes through the study of organisms, their molecular, cellular and physiological processes, their genetics, evolution and behaviour and their interrelationships with the environment
- 2 Engage with some of the current developments in animal behaviour and welfare and their applications, and the philosophical and ethical issues involved
- 3 Engage with the essential facts, concepts, principles and theories that underpin animal behaviour and welfare science
- 4 Understand and evaluate information and data within the context of a theoretical framework
- 5 Be able to acquire, analyse and interpret biological information
- 6 Design and conduct studies to investigate a hypothesis
- 7 Understand scientific principles underlying animal health, management and welfare
- 8 Appreciate the legal restrictions & ethical considerations placed on those responsible for animal well being
- 9 Understand fundamental aspects of animal science relating to management of animals
- 10 Assess problems and identify constraints in management of animals and make practical recommendations regarding their husbandry

### 4.2 Subject Specific Intellectual Skills

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

- 11 Use appropriate literature with a full and critical understanding
- 12 Demonstrate basic laboratory competence and analytical skills
- 13 Demonstrate knowledge of basic genetic principles
- 14 Understand how organisms are classified and identified
- 15 Devise effective strategies for modifying animal behaviour
- 16 Present solutions to problems in animal management to animal managers in an effective manner

### 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 basic laboratory competence and analytical skills
- 19 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:

- 20 Intellectual skills; analysing, synthesising and summarising information
- 21 Intellectual skills; recognising the moral and ethical issues of investigation
- 22 Practical skills, such as designing, conducting and reporting on investigations, undertaking investigations in a safe and ethical manner
- 23 Numeracy, communication and IT skills, including the collation and statistical analysis of data, citing & referencing work appropriately, communicating using a range of formats
- 24 Interpersonal & teamwork skills, such as evaluating performance as an individual and team player, recognising and respecting alternative points of view
- 25 Self-management and personal development skills to manage team-working situations and working effectively with others on projects
- 26 Demonstrate self-awareness and confidence in skills transferable to the workplace

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](http://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 Animal Behaviour and Welfare. 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 and teaching expertise of the academic 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:**

Students are encouraged to see themselves as producers of knowledge and collaborators in their learning experience. 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 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 animal scientists employed in graduate roles and their employers. There will be an emphasis on the practical application of principles and the development of graduate skills will be included in subject specific units.

Students on the Animal Behaviour and Welfare Programme programme will be allocated to a personal academic tutor who will support them throughout their studies. This person will guide them during timetabled tutorials associated with Research Methods modules in year 1 and 2 of their programme, 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.

#### **Work Placement Option:**

An optional 48 week placement can 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

The assessment strategy adopted within the BSc (Hons) Animal Behaviour and Welfare aims to test subject knowledge, independent thought and skills acquisition and to provide information about candidates that will be useful to employers. They will be balanced in accordance with the learning outcomes and will include the following modes:

- unseen examinations;
- seen or open-book examinations;
- computer-based assessments;
- laboratory skills;
- laboratory and/or fieldwork reports;
- essays, summaries and assignments;
- data interpretation exercises;
- critical analysis of case studies;
- oral, poster, audio-visual, or electronic presentations;
- a project or dissertation report;

Formative assessment is provided during practical classes where students can apply knowledge from lectures as well as seek guidance on practical skills. Students are also encouraged to ask questions during lectures to clarify issues, or even develop ideas derived from lecture material. Lecturer's will also set aside time for workshops and seminars focused on key subjects, where for example students can work in groups on one of a number of topics, present their conclusions for class based debate and receive feedback from lecturers as well as peers.

The use of technology is embedded within the learning process via our Blackboard VLE. Student electronic communities are used to facilitate communication and wikis can be 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

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Research Methods for Life Scientists 1 2019-20	15	Core
Vertebrate Physiology 2019-20	15	Core
Introduction to Animal Behaviour and Welfare 2019-20	15	Core
Genetics 2019-20	15	Core
Ecology 2019-20	15	Core
Cell Biology 2019-20	15	Core
Animal Management 2019-20	15	Core
Comparative Form and Function in Animals 2019-20	15	Core

### Level 2

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Research Methods for Life Scientists 2 2020-21	15	Core
Reproduction and Development 2020-21	15	Optional
Immunology 2020-21	15	Optional
Evolution 2020-21	15	Optional
Conservation Biology 2020-21	15	Core
Animal Nutrition 2020-21	15	Core
Invertebrate Zoology 2020-21	15	Optional
Animal Health and Disease 2020-21	15	Core
Animal Protection 2020-21	15	Core
Animal Behaviour 2020-21	15	Core
Vertebrate Zoology 2020-21	15	Optional
Work Experience 2020-21	15	Optional

### Level 3

<b>Title</b>	<b>Credit Rating</b>	<b>Core / Optional</b>
Current Issues in Life Sciences 2021-22	15	Optional
Animal Welfare Science 2021-22	15	Core
Behavioural Ecology 2021-22	15	Core
Animal Cognition 2021-22	15	Core
Genetics & Bioethics 2021-22	15	Optional
Overseas Field Course 2021-22	15	Optional
Life Sciences Research Project 2021-22	30	Core
Veterinary Parasitology 2021-22	15	Optional
Palaeobiology 2021-22	15	Optional
Control of Animal Disease 2021-22	15	Optional

Integrative Ecology 2021-22	15	Optional
Animal Population Genetics 2021-22	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 Management 2019-20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Cell Biology 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
Comparative Form and Function in Animals 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
Ecology 2019-20	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
Genetics 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
Introduction to Animal Behaviour and Welfare 2019-20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Research Methods for Life Scientists 1 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
Vertebrate Physiology 2019-20	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>			

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Animal Management 2019-20			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>
Cell Biology 2019-20		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
Comparative Form and Function in Animals 2019-20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
Ecology 2019-20		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Genetics 2019-20	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Introduction to Animal Behaviour and Welfare 2019-20			<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Research Methods for Life Scientists 1 2019-20					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Vertebrate Physiology 2019-20		✓					✓					
											PO25	PO26
Animal Management 2019-20											✓	
Cell Biology 2019-20												
Comparative Form and Function in Animals 2019-20												
Ecology 2019-20											✓	
Genetics 2019-20												
Introduction to Animal Behaviour and Welfare 2019-20												
Research Methods for Life Scientists 1 2019-20											✓	
Vertebrate Physiology 2019-20												

## Level 2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Animal Behaviour 2020-21	✓	✓	✓		✓	✓	✓				✓	
Animal Health and Disease 2020-21					✓		✓		✓			✓
Animal Nutrition 2020-21	✓						✓		✓	✓		
Animal Protection 2020-21		✓	✓					✓		✓		
Conservation Biology 2020-21	✓			✓	✓	✓					✓	
Evolution 2020-21	✓			✓							✓	✓
Immunology 2020-21	✓				✓		✓					✓
Invertebrate Zoology 2020-21	✓			✓			✓				✓	
Reproduction and Development 2020-21	✓										✓	
Research Methods for Life Scientists 2 2020-21	✓			✓	✓	✓					✓	
Vertebrate Zoology 2020-21	✓			✓			✓				✓	
Work Experience 2020-21												

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Animal Behaviour 2020-21			✓				✓				✓	✓

Animal Health and Disease 2020-21		✓		✓		✓							
Animal Nutrition 2020-21													
Animal Protection 2020-21				✓					✓				✓
Conservation Biology 2020-21		✓			✓		✓			✓			✓
Evolution 2020-21	✓	✓						✓					
Immunology 2020-21	✓					✓				✓			
Invertebrate Zoology 2020-21		✓											
Reproduction and Development 2020-21	✓											✓	
Research Methods for Life Scientists 2 2020-21							✓	✓				✓	
Vertebrate Zoology 2020-21		✓											
Work Experience 2020-21													

	PO25	PO26
Animal Behaviour 2020-21	✓	
Animal Health and Disease 2020-21		
Animal Nutrition 2020-21		
Animal Protection 2020-21	✓	
Conservation Biology 2020-21	✓	
Evolution 2020-21		
Immunology 2020-21		
Invertebrate Zoology 2020-21	✓	
Reproduction and Development 2020-21	✓	
Research Methods for Life Scientists 2 2020-21		
Vertebrate Zoology 2020-21		
Work Experience 2020-21		

### Level 3

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Animal Cognition 2021-22	✓		✓	✓	✓	✓					✓	

Animal Population Genetics 2021-22	✓				✓					✓		
Animal Welfare Science 2021-22		✓	✓		✓		✓	✓	✓	✓		
Behavioural Ecology 2021-22	✓		✓		✓		✓					
Control of Animal Disease 2021-22	✓				✓		✓		✓		✓	✓
Current Issues in Life Sciences 2021-22							✓					
Genetics & Bioethics 2021-22								✓				
Integrative Ecology 2021-22	✓			✓	✓							
Life Sciences Research Project 2021-22	✓	✓	✓		✓	✓	✓					✓
Overseas Field Course 2021-22				✓	✓	✓						
Palaeobiology 2021-22	✓			✓	✓	✓					✓	✓
Veterinary Parasitology 2021-22	✓		✓		✓		✓		✓			

	PO13	PO14	PO15	PO16	PO17	PO18	PO19	PO20	PO21	PO22	PO23	PO24
Animal Cognition 2021-22			✓									
Animal Population Genetics 2021-22	✓			✓			✓					
Animal Welfare Science 2021-22			✓	✓					✓	✓		✓
Behavioural Ecology 2021-22							✓				✓	
Control of Animal Disease 2021-22					✓	✓				✓		
Current Issues in Life Sciences 2021-22								✓	✓			✓
Genetics & Bioethics 2021-22	✓								✓	✓	✓	
Integrative Ecology 2021-22	✓						✓	✓	✓			
Life Sciences Research Project 2021-22					✓		✓	✓	✓	✓	✓	✓
Overseas Field Course 2021-22		✓					✓			✓	✓	
Palaeobiology 2021-22		✓			✓		✓	✓	✓		✓	
Veterinary Parasitology 2021-22				✓			✓				✓	✓

	PO25	PO26
Animal Cognition 2021-22		
Animal Population Genetics 2021-22		
Animal Welfare Science 2021-22	✓	
Behavioural Ecology 2021-22		
Control of Animal Disease 2021-22		
Current Issues in Life Sciences 2021-22		

Genetics & Bioethics 2021-22

Integrative Ecology 2021-22

Life Sciences Research Project 2021-22

Overseas Field Course 2021-22

Palaeobiology 2021-22

Veterinary Parasitology 2021-22




## 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 Management 2019-20											50	
Cell Biology 2019-20									50			
Comparative Form and Function in Animals 2019-20												
Ecology 2019-20												
Genetics 2019-20												
Introduction to Animal Behaviour and Welfare 2019-20												
Research Methods for Life Scientists 1 2019-20										50		50
Vertebrate Physiology 2019-20												

	13	14	15	16	17	18	19	20	21	22	23	24
Animal Management 2019-20				50								
Cell Biology 2019-20		50										
Comparative Form and Function in Animals 2019-20	50			50								
Ecology 2019-20										10		
Genetics 2019-20												50
Introduction to Animal Behaviour and Welfare 2019-20						50						
Research Methods for Life Scientists 1 2019-20												
Vertebrate Physiology 2019-20										60		

	25	26	27	28	29	30	31	32	33	34	35	36
Animal Management 2019-20												
Cell Biology 2019-20												
Comparative Form and Function in Animals 2019-20												
Ecology 2019-20										50		40
Genetics 2019-20										50		
Introduction to Animal Behaviour and Welfare 2019-20										50		
Research Methods for Life Scientists 1 2019-20												
Vertebrate Physiology 2019-20									40			

	37	38	39	40	41	42	43	44	45	46	47	48
Animal Management 2019-20												
Cell Biology 2019-20												
Comparative Form and Function in Animals 2019-20												
Ecology 2019-20												
Genetics 2019-20												
Introduction to Animal Behaviour and Welfare 2019-20												
Research Methods for Life Scientists 1 2019-20												
Vertebrate Physiology 2019-20												

	49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)
Animal Management 2019-20						
Cell Biology 2019-20						

Comparative Form and Function in Animals 2019-20												
Ecology 2019-20												
Genetics 2019-20												
Introduction to Animal Behaviour and Welfare 2019-20												
Research Methods for Life Scientists 1 2019-20												
Vertebrate Physiology 2019-20												

## Level 2

	01	02	03	04	05	06	07	08	09	10	11	12
Animal Behaviour 2020-21												
Animal Health and Disease 2020-21												50
Animal Nutrition 2020-21												
Animal Protection 2020-21						50						
Conservation Biology 2020-21												
Evolution 2020-21												
Immunology 2020-21												
Invertebrate Zoology 2020-21												
Reproduction and Development 2020-21												
Research Methods for Life Scientists 2 2020-21										50		50
Vertebrate Zoology 2020-21					50							
Work Experience 2020-21												

	13	14	15	16	17	18	19	20	21	22	23	24
Animal Behaviour 2020-21						50						50
Animal Health and Disease 2020-21				50								
Animal Nutrition 2020-21								50				50
Animal Protection 2020-21												
Conservation Biology 2020-21									30			
Evolution 2020-21	50			50								

Immunology 2020-21							50					
Invertebrate Zoology 2020-21	60	40										
Reproduction and Development 2020-21						50						50
Research Methods for Life Scientists 2 2020-21												
Vertebrate Zoology 2020-21		50										
Work Experience 2020-21												
	25	26	27	28	29	30	31	32	33	34	35	36
Animal Behaviour 2020-21												
Animal Health and Disease 2020-21												
Animal Nutrition 2020-21												
Animal Protection 2020-21												
Conservation Biology 2020-21		30									40	
Evolution 2020-21												
Immunology 2020-21												
Invertebrate Zoology 2020-21												
Reproduction and Development 2020-21												
Research Methods for Life Scientists 2 2020-21												
Vertebrate Zoology 2020-21												
Work Experience 2020-21												
	37	38	39	40	41	42	43	44	45	46	47	48
Animal Behaviour 2020-21												
Animal Health and Disease 2020-21												
Animal Nutrition 2020-21												
Animal Protection 2020-21												
Conservation Biology 2020-21												
Evolution 2020-21												
Immunology 2020-21												
Invertebrate Zoology 2020-21												
Reproduction and Development 2020-21												

Research Methods for Life Scientists 2 2020-21													
Vertebrate Zoology 2020-21													
Work Experience 2020-21													
							49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)	
Animal Behaviour 2020-21													
Animal Health and Disease 2020-21													
Animal Nutrition 2020-21													
Animal Protection 2020-21											50		
Conservation Biology 2020-21													
Evolution 2020-21													
Immunology 2020-21													50
Invertebrate Zoology 2020-21													
Reproduction and Development 2020-21													
Research Methods for Life Scientists 2 2020-21													
Vertebrate Zoology 2020-21													
Work Experience 2020-21													

### Level 3

	01	02	03	04	05	06	07	08	09	10	11	12
Animal Cognition 2021-22						40						60
Animal Population Genetics 2021-22							20					30
Animal Welfare Science 2021-22												
Behavioural Ecology 2021-22												
Control of Animal Disease 2021-22												

Current Issues in Life Sciences 2021-22													
Genetics & Bioethics 2021-22													100
Integrative Ecology 2021-22													
Life Sciences Research Project 2021-22											100		
Overseas Field Course 2021-22	20												
Palaeobiology 2021-22													
Veterinary Parasitology 2021-22								50					50
	13	14	15	16	17	18	19	20	21	22	23	24	
Animal Cognition 2021-22													
Animal Population Genetics 2021-22				50									
Animal Welfare Science 2021-22													50
Behavioural Ecology 2021-22											40		
Control of Animal Disease 2021-22													
Current Issues in Life Sciences 2021-22											50	50	
Genetics & Bioethics 2021-22													
Integrative Ecology 2021-22	50			50									
Life Sciences Research Project 2021-22													
Overseas Field Course 2021-22				80									
Palaeobiology 2021-22													
Veterinary Parasitology 2021-22													
	25	26	27	28	29	30	31	32	33	34	35	36	
Animal Cognition 2021-22													
Animal Population Genetics 2021-22													
Animal Welfare Science 2021-22													
Behavioural Ecology 2021-22													
Control of Animal Disease 2021-22		40						60					
Current Issues in Life Sciences 2021-22													
Genetics & Bioethics 2021-22													
Integrative Ecology 2021-22													
Life Sciences Research Project 2021-22													
Overseas Field Course 2021-22													

Palaeobiology 2021-22								50					
Veterinary Parasitology 2021-22													
	37	38	39	40	41	42	43	44	45	46	47	48	
Animal Cognition 2021-22													
Animal Population Genetics 2021-22													
Animal Welfare Science 2021-22													
Behavioural Ecology 2021-22													
Control of Animal Disease 2021-22													
Current Issues in Life Sciences 2021-22													
Genetics & Bioethics 2021-22													
Integrative Ecology 2021-22													
Life Sciences Research Project 2021-22													
Overseas Field Course 2021-22													
Palaeobiology 2021-22													
Veterinary Parasitology 2021-22													
							49	50	51	52	EP 1 (Wk 16)	EP 2 (Wks 33, 34, 35)	
Animal Cognition 2021-22													
Animal Population Genetics 2021-22													
Animal Welfare Science 2021-22												50	
Behavioural Ecology 2021-22												60	
Control of Animal Disease 2021-22													
Current Issues in Life Sciences 2021-22													
Genetics & Bioethics 2021-22													
Integrative Ecology 2021-22													
Life Sciences Research Project 2021-22													
Overseas Field Course 2021-22													
Palaeobiology 2021-22												50	





## 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					✓				

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

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO1	✓	✓	✓	✓	✓		✓	✓	✓

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

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

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO1			✓	✓	✓	✓	✓	✓	✓
PO2	✓	✓							
PO3		✓							
PO4									
PO5	✓								
PO6									
PO7				✓		✓	✓		
PO8	✓								
PO9			✓			✓			
PO10									

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

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

	Biosci64
PO1	
PO2	
PO3	
PO4	✓
PO5	✓
PO6	✓
PO7	

PO8	
PO9	
PO10	

## Subject Specific Intellectual Skills

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO11	✓						✓		
PO12								✓	
PO13			✓						✓
PO14									
PO15				✓					
PO16	✓				✓				

	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO11									
PO12				✓					
PO13	✓	✓							
PO14							✓	✓	
PO15									✓
PO16									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO11									
PO12									
PO13		✓							
PO14		✓	✓						
PO15				✓	✓	✓			
PO16				✓	✓				

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36

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PO11							✓		
PO12						✓		✓	✓
PO13									
PO14									
PO15									
PO16				✓	✓		✓		

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO11		✓							
PO12								✓	✓
PO13					✓	✓			
PO14									
PO15									
PO16	✓								

	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO11									
PO12									
PO13						✓			
PO14							✓		
PO15								✓	
PO16					✓			✓	

	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO11									
PO12									
PO13									
PO14									
PO15	✓								
PO16								✓	✓

PO11									Biosci64
------	--	--	--	--	--	--	--	--	----------

PO12	
PO13	
PO14	
PO15	
PO16	

## Subject Specific Practical Skills

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO17		✓		✓					
PO18		✓		✓					
PO19	✓	✓		✓		✓			

	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO17				✓					
PO18				✓					
PO19									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO17									
PO18									
PO19									

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36
PO17						✓		✓	✓
PO18						✓		✓	✓
PO19									✓

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO17									
PO18									

PO19									
	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO17									
PO18									
PO19									
	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO17									
PO18									
PO19									
									Biosci64
PO17									✓
PO18									
PO19									✓

## Transferable Skills and Attributes

	Biosci01	Biosci02	Biosci03	Biosci04	Biosci05	Biosci06	Biosci07	Biosci08	Biosci09
PO20	✓	✓	✓			✓			
PO21					✓				
PO22			✓		✓	✓			
PO23			✓			✓			
PO24									
PO25				✓					
PO26				✓			✓		
	Biosci10	Biosci11	Biosci12	Biosci13	Biosci14	Biosci15	Biosci16	Biosci17	Biosci18
PO20									
PO21									

PO22				✓					
PO23									
PO24				✓					
PO25									
PO26									

	Biosci19	Biosci20	Biosci21	Biosci22	Biosci23	Biosci24	Biosci25	Biosci26	Biosci27
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									
PO26									

	Biosci28	Biosci29	Biosci30	Biosci31	Biosci32	Biosci33	Biosci34	Biosci35	Biosci36
PO20									✓
PO21						✓		✓	✓
PO22						✓		✓	✓
PO23						✓	✓		✓
PO24				✓					✓
PO25									✓
PO26									✓

	Biosci37	Biosci38	Biosci39	Biosci40	Biosci41	Biosci42	Biosci43	Biosci44	Biosci45
PO20		✓							
PO21	✓								
PO22								✓	
PO23									
PO24									
PO25									
PO26	✓								



	Biosci46	Biosci47	Biosci48	Biosci49	Biosci50	Biosci51	Biosci52	Biosci53	Biosci54
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									
PO26									

	Biosci55	Biosci56	Biosci57	Biosci58	Biosci59	Biosci60	Biosci61	Biosci62	Biosci63
PO20									
PO21									
PO22									
PO23									
PO24									
PO25									
PO26									

	Biosci64
PO20	
PO21	
PO22	✓
PO23	
PO24	
PO25	
PO26	

## **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.*