



# UNIVERSITY OF LINCOLN

## Programme Specification

Title:

### Ecology and Conservation

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: 24 Sep 2018

| <b>Level</b>                                             | <b>Date</b> |
|----------------------------------------------------------|-------------|
| Level 1 or Certificate of Higher Education (CertHE)      | 2020-21     |
| Level 2 or Diploma of Higher Education (DipHE)           | 2021-22     |
| Level 3 or Bachelor of Science with Honours (BSc (Hons)) | 2022-23     |

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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>                                         | Ecology and Conservation                                                                                                         |
| <b>Exit Awards and Titles</b>                                   | Certificate of Higher Education (CertHE)<br>Diploma of Higher Education (DipHE)<br>Bachelor of Science with Honours (BSc (Hons)) |
| <b>Subject(s)</b>                                               | Ecology                                                                                                                          |
| <b>Mode(s) of delivery</b>                                      | Full Time                                                                                                                        |
| <b>Is there a Placement or Exchange?</b>                        | Yes                                                                                                                              |
| <b>UCAS code</b>                                                | C180                                                                                                                             |
| <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>                                         | Carl Soulsbury (csoulsbury)                                                                                                      |
| <b>Relevant Subject Benchmark Statements</b>                    |                                                                                                                                  |
| <b>Professional, Statutory or Regulatory Body Accreditation</b> |                                                                                                                                  |
| <b>Programme Start Date</b>                                     | 2020-21                                                                                                                          |

## **3. Programme Description**

### **3.1 Overview**

This BSc (Hons) Ecology and Conservation is designed to meet the needs of students who want to gain knowledge, understanding and skills that will allow them to work in a diverse and varying set of careers. Our aim is to produce confident, knowledgeable and questioning graduates with the diverse skills and experience needed for a wide range of careers. This broad-based Ecology and Conservation programme builds on the success of the more specialist biosciences programmes currently offered within the University of Lincoln and includes teaching from biology, ecology, biochemistry, molecular biology and animal behaviour. This degree also gives students the opportunity to learn key aspects of geography.

Students will be expected to integrate information and concepts from the breadth of Ecology and Conservation, but will be given opportunities to develop specialist interests in their final year, as this will enhance their employability in certain sectors. To facilitate skill acquisition, two dedicated practical skills modules are delivered in Level 1 and 3. The Level 3 module (Practical Skills in Conservation), is design to include self-reflection and portfolio building, right at the moment they enter the graduate job market. 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 the laboratory and/or field allow students to practise project management and data gathering, handling and interpretation skills. All students will have the opportunity to conduct some independent 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 the ecology, conservation 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 Ecology and Conservation 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 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.
- 2 Change and scale – the world is changing and always has been – but the scale and pace of anthropogenic scale is novel and has the potential to fundamentally change the biology of the planet.
- 3 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 Behaviour: as responses of organisms to external and internal stimuli but understood within the interdisciplinary context of evolution, cell biology, physiology and ecology.
- 5 Sustainability: assess the sustainability of policies, programmes and projects at scales ranging from the local to the global and to analyse environmental problems using knowledge from different disciplines.
- 6 Genetics: underpinning importance of genetics as the key to modern biology including the potential for genomics and other ‘omics’ technologies to advance our knowledge. Understand how these techniques can be applied to real life ecology and conservation problems.
- 7 Physical environment: demonstrate a fundamental understanding of the biogeochemical processes and pathways and how they interact with planetary health and the biosphere.
- 8 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)
- 9 Conservation: understand the multidisciplinary nature of conservation science and how it relates to past, present and future environmental and societal challenges.
- 10 Evolution: understand the fundamental process of natural selection and why it is the major conceptual advance that allows us to understand life.

### 4.2 Subject Specific Intellectual Skills

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

- 11 Design, manage, monitor, present and analyse critically research project work.
- 12 Formulate hypotheses and design appropriate experiments and projects to test them.

- 13 Demonstrate an understanding of key ethical issues relating to ecology and conservation.
- 14 Acquire, evaluate, process, interpret and criticise information, conclusions and opinions from scientific publications and press and other media reports.
- 15 Demonstrate the capacity to communicate complex concepts and arguments clearly and effectively to various audiences in an appropriate manner.
- 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.
- 19 Demonstrate an understanding of the interactions of organisms with each other, the environment and how these may change in the future.

### **4.4 Transferable Skills and Attributes**

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

- 20 Demonstrate clear oral and written communication of scientific information to audiences with different levels of background knowledge.
- 21 Demonstrate and apply numeracy skills to a wide range of situations, including abstract application of simple mathematical models.
- 22 Display 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.
- 23 Apply and evidence problem solving and critical analysis of own work, with effective personal time management.
- 24 Show team-work and the ability to work with others on projects, including demonstrating leadership as appropriate.
- 25 Have positive and effective strategies to support life-long learning.
- 26 Apply and demonstrate project and person management, including skills in negotiation and mediation.
- 27 Display confidence and self-awareness and the 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**

In general terms, lectures will introduce key topics in the subject area and guide students' independent study. Practical classes 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. Work will be presented as posters, reports, videos and as oral presentations. 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 ecologists and conservation biologists as well as employers. Reference will be made during teaching to the practical application of principles and the development of graduate skills will be included in subject specific modules. This will be facilitated by building and updating an Employability Skills Portfolio (ESP).

The overarching strategy for learning and teaching at the University of Lincoln is that of students are "producers of knowledge". This ethos underlies much of the teaching of science at the University of Lincoln and will be experienced throughout the Ecology and Conservation Degree programme. This approach will be particularly stressed in a number of key modules including Research Methods for Life Scientists (levels 1 and 2), Practical Skills in Ecology, Ecology, Plant-Animal Interactions, Overseas Field Course, Practical Skills in Conservation and Life Sciences Research Project. The principles of students as producers of knowledge are embedded in the delivery of the Ecology and Conservation Programme in the following ways.

The Ecology and Conservation programme provides many situations for the use of problem-, enquiry-, and research-based learning for students at all levels. These allow students the opportunity for both directed and independent research for the production of oral and written presentations as well as collection, presentation and interpretation of novel data.

Use of technology is embedded within the learning process via the University's 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. For individual modules, schemes such as "Peerwise" and "Pebblepad", are encouraged by academic staff to assist in the development of independent learning by students and to help build portfolios of skills. In addition, general written materials designed to support a student's learning, but are not necessarily part of a specific module, are provided via a Blackboard community site. Such materials include advice on writing essays and reports, citing sources of scientific information, advice on the use and application of statistics.

Effective teaching of Ecology and Conservation incorporates a wide range of teaching environments that range from traditional classroom-based lectures and seminars to sessions in field-based situations, often off campus. Such a range of situations provides variety of delivery and increases opportunity for students to develop their own learning strategies according to the environment.

Assessment in the Ecology and Conservation programme is varied between and across modules, ranging from essays through practical reports, online tests, videos, presentations and debates. In some instances, students are involved in peer-review of their own work prior to and during assessment. Assessments have also designed with feedback from employers, so that students can target specific sets of core skills.



Academic staff delivering taught material on the Ecology and Conservation degree will draw on their own practical research experience and publications, informing students of novel developments as they occur. Moreover, teaching is dynamic within the School of Life Sciences and staff are encouraged to assimilate all feedback into improving delivery of lectures, practicals and assessments.

The student experience underpins the delivery of Ecology and Conservation modules and consideration is made to the views of students partaking in exercises. Regular contact will be made via student representatives and the Programme leader to ensure that students are not only informed of the development of their learning experience but can also contribute to this process.

Research in Ecology and Conservation requires access to the widest range of scientific literature and access to these resources is shared with students. As well as access to library resources there is a considerable on-line resource of subscriptions to electronic journals and eBooks. Students are encouraged to engage with training courses provided centrally via the library that assist the process of research and presentation of information.

Employability and careers are important in the delivery of Ecology and Conservation. Students are encouraged to develop generic skills and a confidence for independent work that are applicable before and after graduation. The final year research project is a key element of students as “producers of knowledge”, which is known to impact on employability. Academic staff are keen to ensure that the highest quality research produced by students is published in scientific journals with the student as an author because of the positive impression that this provides potential employers. The Lincolnshire Wildlife Trust are also supportive in providing research opportunities using their protected sites and providing research questions that they require answering.

Development of extra-curricular experience is encouraged at all levels – The Lincoln Award run by the University develops key skills and provides an evidence base for voluntary work. Within the College of Science, there is a dedicated careers officer and the careers service provides a comprehensive series of events and consultations to assist students and alumni in their career development. Extra-curricular research-based projects over the summer vacation, are regularly offered by staff to provide direct experience of a working environment outside of the typical university-based learning environment. These are supported by University or School-led studentships.

#### Contact Hours and Independent Study

Contact hours may vary for each year of a degree. When engaging in a full-time degree students should, at the very least, expect to undertake a minimum of 37 hours of study each week during term time (including independent study) in addition to potentially undertaking assignments outside of term time. The composition and delivery for the course breaks down differently for each module and may include lectures, seminars, workshops, independent study, practicals, work placements, research and one-to-one learning.

University-level study involves a significant proportion of independent study, exploring the material covered in lectures and seminars. As a general guide, for every hour in class students are expected to spend two - three hours in independent study.

On each of our course pages you can find information on typical contact hours, modes of delivery and a breakdown of assessment methods. Where available, you will also be able to access a link to Unistats.com, where the latest data on student satisfaction and employability outcomes can be found.

#### Level 1:

At level one students will typically have around 18 hours of contact time per week. A typical week may consist of:

- 1 hour of external visits
- 1 hour of fieldwork
- 4 hours of practical classes and workshops
- 1 hour of project supervision
- 1 hour of tutorial time
- 1 hour in seminars
- 9 hours in lectures

#### Level 2:

At level two students will typically have around 16 hours of contact time per week. A typical week may consist of:

- 1 hour of fieldwork
- 5 hours of practical classes and workshops
- 1 hour in seminars
- 9 hours in lectures

#### Level 3:

At level three students will typically have around 16 hours of contact time per week. A typical week may consist of:

- 4 hours of fieldwork
- 1 hour of practical classes and workshops
- 3 hours of project supervision
- 1 hour of tutorial time
- 1 hour in seminars
- 6 hours in lectures

#### Overall Workload and Independent Study

University-level study involves a significant proportion of independent study, exploring the material covered in lectures and seminars. Students' overall workload will consist of their scheduled contact hours combined with independent study. The expected level of independent study is detailed below.

#### Level 1:

- Total scheduled teaching and learning hours: 342
- Percentage scheduled teaching and learning hours: 29%
- Percentage of independent study expected: 71%

#### Level 2:

- Total scheduled teaching and learning hours: 371
- Percentage scheduled teaching and learning hours: 31%
- Percentage of independent study expected: 69%

#### Level 3:

- Total scheduled teaching and learning hours: 321
- Percentage scheduled teaching and learning hours: 27%
- Percentage of independent study expected: 73%

## **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, which will include laboratory exercises or reports, case studies, problem solving exercises, videos, portfolios, essays, poster or oral presentations by individuals or by groups, 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 by posting an assignment front sheet on Blackboard.

In academic year 2016/17 we moved to categorical marking schemes as a way of ensuring more standardised marking across teaching staff and between degrees. These are enhanced by having assessment-specific marking schemes (presentations, essays).

## 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 2020-21   | 15                   | Core                   |
| Environmental Data Monitoring & Analysis 2020-21 | 15                   | Core                   |
| Ecology 2020-21                                  | 15                   | Core                   |
| Plant Structure and Function 2020-21             | 15                   | Core                   |
| Comparative Form and Function in Animals 2020-21 | 15                   | Core                   |
| Genetics 2020-21                                 | 15                   | Core                   |
| Sustainable Environments & Ecosystems 2020-21    | 15                   | Core                   |
| Practical Field Skills in Ecology 2020-21        | 15                   | Core                   |

### Level 2

| <b>Title</b>                                          | <b>Credit Rating</b> | <b>Core / Optional</b> |
|-------------------------------------------------------|----------------------|------------------------|
| Biogeography & Planetary Health 2021-22               | 15                   | Core                   |
| Animal Nutrition 2021-22                              | 15                   | Optional               |
| Animal Behaviour 2021-22                              | 15                   | Optional               |
| Vertebrate Zoology 2021-22                            | 15                   | Optional               |
| Molecular Biology 2021-22                             | 15                   | Optional               |
| Invertebrate Zoology 2021-22                          | 15                   | Optional               |
| Evolution 2021-22                                     | 15                   | Core                   |
| Conservation Biology 2021-22                          | 15                   | Core                   |
| Plant-Animal Interactions 2021-22                     | 15                   | Core                   |
| Managing Ecosystems 2021-22                           | 15                   | Core                   |
| Climatology & Hydrology 2021-22                       | 15                   | Optional               |
| River & Coastal Systems: Science & Management 2021-22 | 15                   | Optional               |
| Ecological Statistical Techniques 2021-22             | 15                   | Core                   |

### Level 3

| <b>Title</b>                             | <b>Credit Rating</b> | <b>Core / Optional</b> |
|------------------------------------------|----------------------|------------------------|
| Practical Skills in Conservation 2022-23 | 15                   | Core                   |
| Urban Ecology 2022-23                    | 15                   | Core                   |
| Life Sciences Research Project 2022-23   | 30                   | Core                   |
| Overseas Field Course 2022-23            | 15                   | Optional               |
| Animal Population Genetics 2022-23       | 15                   | Optional               |
| Behavioural Ecology 2022-23              | 15                   | Optional               |
| Integrative Ecology 2022-23              | 15                   | Optional               |
| Palaeobiology 2022-23                    | 15                   | Optional               |
| Soil Biology 2022-23                     | 15                   | Core                   |



## 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 |
|--------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Comparative Form and Function in Animals 2020-21 |     |     |     |     |     |     |     | ✓   |     | ✓    |      |      |
| Ecology 2020-21                                  | ✓   | ✓   |     |     |     |     |     |     |     | ✓    | ✓    | ✓    |
| Environmental Data Monitoring & Analysis 2020-21 | ✓   |     |     |     |     |     | ✓   |     | ✓   |      |      |      |
| Genetics 2020-21                                 |     |     |     |     |     | ✓   |     |     |     | ✓    |      |      |
| Plant Structure and Function 2020-21             | ✓   |     |     |     |     |     |     |     |     |      |      |      |
| Practical Field Skills in Ecology 2020-21        | ✓   |     |     |     |     |     |     |     | ✓   |      | ✓    | ✓    |
| Research Methods for Life Scientists 1 2020-21   |     |     | ✓   |     |     |     |     |     |     |      | ✓    | ✓    |
| Sustainable Environments & Ecosystems 2020-21    | ✓   |     |     |     | ✓   |     | ✓   |     | ✓   |      |      |      |

|                                                  | PO13 | PO14 | PO15 | PO16 | PO17 | PO18 | PO19 | PO20 | PO21 | PO22 | PO23 | PO24 |
|--------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Comparative Form and Function in Animals 2020-21 |      |      |      |      |      |      |      | ✓    |      |      |      |      |
| Ecology 2020-21                                  |      |      |      |      | ✓    |      | ✓    | ✓    |      |      |      |      |
| Environmental Data Monitoring & Analysis 2020-21 |      |      |      |      | ✓    |      |      |      |      |      |      |      |
| Genetics 2020-21                                 |      |      |      |      | ✓    | ✓    |      |      | ✓    |      |      |      |
| Plant Structure and Function 2020-21             |      |      |      |      |      |      |      |      |      | ✓    |      |      |
| Practical Field Skills in Ecology 2020-21        |      |      | ✓    |      | ✓    |      |      | ✓    | ✓    |      |      |      |
| Research Methods for Life Scientists 1           | ✓    | ✓    | ✓    |      | ✓    | ✓    |      | ✓    | ✓    | ✓    | ✓    | ✓    |

|                                                  |  |  |  |  |  |  |  |   |  |      |      |      |
|--------------------------------------------------|--|--|--|--|--|--|--|---|--|------|------|------|
| 2020-21                                          |  |  |  |  |  |  |  |   |  |      |      |      |
| Sustainable Environments & Ecosystems 2020-21    |  |  |  |  |  |  |  | ✓ |  |      |      |      |
|                                                  |  |  |  |  |  |  |  |   |  |      |      |      |
|                                                  |  |  |  |  |  |  |  |   |  | PO25 | PO26 | PO27 |
| Comparative Form and Function in Animals 2020-21 |  |  |  |  |  |  |  |   |  |      |      |      |
| Ecology 2020-21                                  |  |  |  |  |  |  |  |   |  |      |      |      |
| Environmental Data Monitoring & Analysis 2020-21 |  |  |  |  |  |  |  |   |  |      |      |      |
| Genetics 2020-21                                 |  |  |  |  |  |  |  |   |  |      |      |      |
| Plant Structure and Function 2020-21             |  |  |  |  |  |  |  |   |  |      |      |      |
| Practical Field Skills in Ecology 2020-21        |  |  |  |  |  |  |  |   |  |      | ✓    |      |
| Research Methods for Life Scientists 1 2020-21   |  |  |  |  |  |  |  |   |  | ✓    |      | ✓    |
| Sustainable Environments & Ecosystems 2020-21    |  |  |  |  |  |  |  |   |  |      |      |      |

## Level 2

|                                                       | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Animal Behaviour 2021-22                              |     |     |     | ✓   |     |     |     |     |     |      |      |      |
| Animal Nutrition 2021-22                              |     |     |     |     |     |     |     | ✓   |     |      |      |      |
| Biogeography & Planetary Health 2021-22               |     | ✓   |     |     |     |     | ✓   |     | ✓   |      |      |      |
| Climatology & Hydrology 2021-22                       |     | ✓   |     |     |     |     | ✓   |     |     |      |      |      |
| Conservation Biology 2021-22                          | ✓   | ✓   |     |     |     |     |     |     |     |      | ✓    | ✓    |
| Ecological Statistical Techniques 2021-22             |     |     |     |     |     |     |     |     |     |      | ✓    | ✓    |
| Evolution 2021-22                                     | ✓   |     |     |     |     |     |     |     |     | ✓    | ✓    | ✓    |
| Invertebrate Zoology 2021-22                          |     |     |     | ✓   |     |     |     | ✓   |     | ✓    |      |      |
| Managing Ecosystems 2021-22                           | ✓   | ✓   |     |     | ✓   |     |     |     | ✓   |      |      |      |
| Molecular Biology 2021-22                             |     |     |     |     |     | ✓   |     |     |     |      |      |      |
| Plant-Animal Interactions 2021-22                     | ✓   |     | ✓   |     |     |     |     |     |     | ✓    | ✓    | ✓    |
| River & Coastal Systems: Science & Management 2021-22 |     | ✓   |     |     |     |     | ✓   |     | ✓   |      |      |      |
| Vertebrate Zoology 2021-22                            |     |     |     | ✓   |     |     |     | ✓   |     | ✓    |      |      |

|                                                       | PO13 | PO14 | PO15 | PO16 | PO17 | PO18 | PO19 | PO20 | PO21 | PO22 | PO23 | PO24 |
|-------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Animal Behaviour 2021-22                              |      |      |      |      |      | ✓    | ✓    | ✓    | ✓    |      |      |      |
| Animal Nutrition 2021-22                              |      |      |      |      | ✓    |      |      | ✓    | ✓    |      |      |      |
| Biogeography & Planetary Health 2021-22               |      | ✓    |      |      |      |      |      | ✓    | ✓    |      |      |      |
| Climatology & Hydrology 2021-22                       |      | ✓    |      |      |      |      |      | ✓    | ✓    |      |      |      |
| Conservation Biology 2021-22                          |      |      |      |      |      | ✓    |      | ✓    |      |      |      |      |
| Ecological Statistical Techniques 2021-22             | ✓    |      | ✓    |      |      | ✓    |      | ✓    | ✓    | ✓    |      |      |
| Evolution 2021-22                                     |      |      |      |      | ✓    | ✓    | ✓    | ✓    | ✓    |      | ✓    | ✓    |
| Invertebrate Zoology 2021-22                          |      |      |      |      | ✓    | ✓    | ✓    | ✓    |      |      |      |      |
| Managing Ecosystems 2021-22                           |      |      | ✓    | ✓    |      |      |      | ✓    |      |      |      |      |
| Molecular Biology 2021-22                             |      |      |      |      | ✓    |      |      |      |      |      |      |      |
| Plant-Animal Interactions 2021-22                     |      |      | ✓    |      |      |      | ✓    | ✓    |      |      |      |      |
| River & Coastal Systems: Science & Management 2021-22 |      | ✓    |      |      |      |      |      | ✓    | ✓    |      |      |      |
| Vertebrate Zoology 2021-22                            |      |      |      |      | ✓    | ✓    | ✓    | ✓    |      |      |      |      |

|                                                       | PO25 | PO26 | PO27 |
|-------------------------------------------------------|------|------|------|
| Animal Behaviour 2021-22                              |      |      |      |
| Animal Nutrition 2021-22                              |      |      |      |
| Biogeography & Planetary Health 2021-22               |      |      |      |
| Climatology & Hydrology 2021-22                       |      |      |      |
| Conservation Biology 2021-22                          |      |      |      |
| Ecological Statistical Techniques 2021-22             |      |      |      |
| Evolution 2021-22                                     |      |      |      |
| Invertebrate Zoology 2021-22                          |      |      |      |
| Managing Ecosystems 2021-22                           |      | ✓    |      |
| Molecular Biology 2021-22                             |      |      |      |
| Plant-Animal Interactions 2021-22                     | ✓    |      |      |
| River & Coastal Systems: Science & Management 2021-22 |      |      |      |
| Vertebrate Zoology 2021-22                            |      |      |      |



### Level 3

|                                          | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Animal Population Genetics 2022-23       |     |     |     | ✓   |     | ✓   |     |     |     |      |      |      |
| Behavioural Ecology 2022-23              |     |     |     | ✓   |     |     |     |     |     | ✓    |      | ✓    |
| Integrative Ecology 2022-23              | ✓   |     |     |     |     |     |     |     |     | ✓    |      | ✓    |
| Life Sciences Research Project 2022-23   |     |     | ✓   |     |     |     |     |     |     |      | ✓    | ✓    |
| Overseas Field Course 2022-23            |     |     | ✓   |     |     |     |     |     |     |      | ✓    | ✓    |
| Palaeobiology 2022-23                    |     |     |     |     |     |     |     |     |     | ✓    |      |      |
| Practical Skills in Conservation 2022-23 |     |     |     |     | ✓   |     |     |     |     |      |      |      |
| Soil Biology 2022-23                     |     | ✓   |     |     |     |     | ✓   |     | ✓   |      |      |      |
| Urban Ecology 2022-23                    |     | ✓   |     |     |     |     |     |     | ✓   |      |      |      |

|                                          | PO13 | PO14 | PO15 | PO16 | PO17 | PO18 | PO19 | PO20 | PO21 | PO22 | PO23 | PO24 |
|------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Animal Population Genetics 2022-23       |      |      | ✓    |      |      |      |      | ✓    |      |      |      |      |
| Behavioural Ecology 2022-23              |      |      |      |      |      |      | ✓    | ✓    |      |      |      |      |
| Integrative Ecology 2022-23              |      |      |      | ✓    |      |      | ✓    | ✓    |      |      |      |      |
| Life Sciences Research Project 2022-23   | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    |      | ✓    | ✓    | ✓    | ✓    |      |
| Overseas Field Course 2022-23            | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    |      | ✓    | ✓    |
| Palaeobiology 2022-23                    |      | ✓    | ✓    |      |      |      | ✓    | ✓    |      |      |      |      |
| Practical Skills in Conservation 2022-23 |      |      | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    |      |      | ✓    |
| Soil Biology 2022-23                     |      | ✓    |      |      |      |      |      |      |      | ✓    | ✓    |      |
| Urban Ecology 2022-23                    |      | ✓    | ✓    |      |      | ✓    | ✓    | ✓    |      |      |      | ✓    |

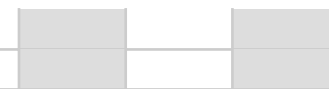
|                                          | PO25 | PO26 | PO27 |
|------------------------------------------|------|------|------|
| Animal Population Genetics 2022-23       |      |      |      |
| Behavioural Ecology 2022-23              |      |      |      |
| Integrative Ecology 2022-23              |      |      |      |
| Life Sciences Research Project 2022-23   | ✓    |      | ✓    |
| Overseas Field Course 2022-23            | ✓    |      |      |
| Palaeobiology 2022-23                    |      |      |      |
| Practical Skills in Conservation 2022-23 |      | ✓    |      |

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Soil Biology 2022-23

Urban Ecology 2022-23

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## 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  |
|--------------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|-----|
| Comparative Form and Function in Animals 2020-21 |    |    |    |    |    |    |    |    |    |    |    |     |
| Ecology 2020-21                                  |    |    |    |    |    |    |    |    |    |    |    |     |
| Environmental Data Monitoring & Analysis 2020-21 |    |    |    |    |    |    |    |    |    |    |    | 100 |
| Genetics 2020-21                                 |    |    |    |    |    |    |    |    |    |    |    |     |
| Plant Structure and Function 2020-21             |    |    |    |    |    |    |    |    |    |    |    |     |
| Practical Field Skills in Ecology 2020-21        |    |    |    |    |    |    | 50 |    |    |    |    | 50  |
| Research Methods for Life Scientists 1 2020-21   |    |    |    |    |    |    |    |    |    | 50 |    | 50  |
| Sustainable Environments & Ecosystems 2020-21    |    |    |    |    |    |    |    |    |    |    |    |     |
|                                                  | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24  |
| Comparative Form and Function in Animals 2020-21 | 50 |    |    | 50 |    |    |    |    |    |    |    |     |
| Ecology 2020-21                                  |    |    |    |    |    |    |    |    |    |    |    |     |
| Environmental Data Monitoring & Analysis 2020-21 |    |    |    |    |    |    |    |    |    |    |    |     |
| Genetics 2020-21                                 |    |    |    |    |    |    |    |    |    |    |    | 50  |
| Plant Structure and Function 2020-21             |    |    |    |    |    |    |    |    |    |    |    |     |
| Practical Field Skills in Ecology 2020-21        |    |    |    |    |    |    |    |    |    |    |    |     |
| Research Methods for Life Scientists 1 2020-21   |    |    |    |    |    |    |    |    |    |    |    |     |
| Sustainable Environments & Ecosystems            |    |    |    |    |    |    |    |    |    |    | 20 |     |





|                                                       |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------------------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Animal Nutrition 2021-22                              |    |    |    |    |    |    |    |    | 50 |    |    |    | 50 |
| Biogeography & Planetary Health 2021-22               |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Climatology & Hydrology 2021-22                       |    |    |    | 60 |    |    |    |    |    |    |    |    |    |
| Conservation Biology 2021-22                          |    |    |    |    |    |    |    |    |    | 30 |    |    |    |
| Ecological Statistical Techniques 2021-22             |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Evolution 2021-22                                     | 50 |    |    | 50 |    |    |    |    |    |    |    |    |    |
| Invertebrate Zoology 2021-22                          | 20 | 40 |    |    |    |    |    |    |    |    |    |    |    |
| Managing Ecosystems 2021-22                           |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Molecular Biology 2021-22                             |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Plant-Animal Interactions 2021-22                     |    |    |    |    | 50 |    |    |    |    |    |    |    | 50 |
| River & Coastal Systems: Science & Management 2021-22 |    |    |    | 60 |    |    |    |    |    |    |    |    |    |
| Vertebrate Zoology 2021-22                            |    | 50 |    |    |    |    |    |    |    |    |    |    |    |
|                                                       | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |    |
| Animal Behaviour 2021-22                              |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Animal Nutrition 2021-22                              |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Biogeography & Planetary Health 2021-22               | 40 |    |    |    |    |    |    |    | 60 |    |    |    |    |
| Climatology & Hydrology 2021-22                       |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Conservation Biology 2021-22                          |    | 30 |    |    |    |    |    |    |    |    | 40 |    |    |
| Ecological Statistical Techniques 2021-22             |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Evolution 2021-22                                     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Invertebrate Zoology 2021-22                          |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Managing Ecosystems 2021-22                           |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Molecular Biology 2021-22                             |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Plant-Animal Interactions 2021-22                     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| River & Coastal Systems: Science & Management 2021-22 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Vertebrate Zoology 2021-22                            |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                                                       | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |    |
| Animal Behaviour 2021-22                              |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Animal Nutrition 2021-22                              |    |    |    |    |    |    |    |    |    |    |    |    |    |

|                                                       |  |  |  |  |  |  |    |    |    |    |                    |                                   |
|-------------------------------------------------------|--|--|--|--|--|--|----|----|----|----|--------------------|-----------------------------------|
| Biogeography & Planetary Health 2021-22               |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Climatology & Hydrology 2021-22                       |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Conservation Biology 2021-22                          |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Ecological Statistical Techniques 2021-22             |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Evolution 2021-22                                     |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Invertebrate Zoology 2021-22                          |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Managing Ecosystems 2021-22                           |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Molecular Biology 2021-22                             |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Plant-Animal Interactions 2021-22                     |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| River & Coastal Systems: Science & Management 2021-22 |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Vertebrate Zoology 2021-22                            |  |  |  |  |  |  |    |    |    |    |                    |                                   |
|                                                       |  |  |  |  |  |  | 49 | 50 | 51 | 52 | EP 1<br>(Wk<br>16) | EP 2<br>(Wks<br>33,<br>34,<br>35) |
| Animal Behaviour 2021-22                              |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Animal Nutrition 2021-22                              |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Biogeography & Planetary Health 2021-22               |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Climatology & Hydrology 2021-22                       |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Conservation Biology 2021-22                          |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Ecological Statistical Techniques 2021-22             |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Evolution 2021-22                                     |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Invertebrate Zoology 2021-22                          |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Managing Ecosystems 2021-22                           |  |  |  |  |  |  |    |    |    |    | 40                 |                                   |
| Molecular Biology 2021-22                             |  |  |  |  |  |  |    |    |    |    | 50                 |                                   |
| Plant-Animal Interactions 2021-22                     |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| River & Coastal Systems: Science & Management 2021-22 |  |  |  |  |  |  |    |    |    |    |                    |                                   |
| Vertebrate Zoology 2021-22                            |  |  |  |  |  |  |    |    |    |    |                    |                                   |

### Level 3

|                                          | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |
|------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Animal Population Genetics 2022-23       |    |    |    |    |    |    | 20 |    |    |    |    | 30 |
| Behavioural Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |    |
| Integrative Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |    |
| Life Sciences Research Project 2022-23   |    |    |    |    |    |    |    |    | 10 |    |    |    |
| Overseas Field Course 2022-23            | 20 |    |    |    |    |    |    |    |    |    |    |    |
| Palaeobiology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |    |
| Practical Skills in Conservation 2022-23 |    |    |    | 30 |    |    |    |    |    |    |    |    |
| Soil Biology 2022-23                     |    |    |    |    |    |    |    |    | 50 |    |    |    |
| Urban Ecology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |    |

|                                          | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Animal Population Genetics 2022-23       |    |    |    | 50 |    |    |    |    |    |    |    |    |
| Behavioural Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    | 40 |    |
| Integrative Ecology 2022-23              | 50 |    |    | 50 |    |    |    |    |    |    |    |    |
| Life Sciences Research Project 2022-23   |    |    |    |    |    |    |    |    |    |    |    |    |
| Overseas Field Course 2022-23            |    |    |    | 80 |    |    |    |    |    |    |    |    |
| Palaeobiology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |    |
| Practical Skills in Conservation 2022-23 |    |    |    |    |    |    |    |    |    |    |    |    |
| Soil Biology 2022-23                     |    |    |    |    |    |    |    |    |    |    |    |    |
| Urban Ecology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |    |

|                                          | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
|------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Animal Population Genetics 2022-23       |    |    |    |    |    |    |    |    |    |    |    |    |
| Behavioural Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |    |
| Integrative Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |    |
| Life Sciences Research Project 2022-23   |    | 70 |    |    | 20 |    |    |    |    |    |    |    |
| Overseas Field Course 2022-23            |    |    |    |    |    |    |    |    |    |    |    |    |
| Palaeobiology 2022-23                    |    |    |    |    |    |    | 50 |    |    |    |    |    |
| Practical Skills in Conservation 2022-23 | 30 |    |    |    |    |    | 40 |    |    |    |    |    |



|                                          |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
|------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|--------------------|-----------------------------------|
| Soil Biology 2022-23                     |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Urban Ecology 2022-23                    |    |    |    |    |    | 60 |    |    |    |    |    |                    |                                   |
|                                          | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48                 |                                   |
| Animal Population Genetics 2022-23       |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Behavioural Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Integrative Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Life Sciences Research Project 2022-23   |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Overseas Field Course 2022-23            |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Palaeobiology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Practical Skills in Conservation 2022-23 |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Soil Biology 2022-23                     |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Urban Ecology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
|                                          |    |    |    |    |    |    |    | 49 | 50 | 51 | 52 | EP 1<br>(Wk<br>16) | EP 2<br>(Wks<br>33,<br>34,<br>35) |
| Animal Population Genetics 2022-23       |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Behavioural Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |                    | 60                                |
| Integrative Ecology 2022-23              |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Life Sciences Research Project 2022-23   |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Overseas Field Course 2022-23            |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Palaeobiology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |                    | 50                                |
| Practical Skills in Conservation 2022-23 |    |    |    |    |    |    |    |    |    |    |    |                    |                                   |
| Soil Biology 2022-23                     |    |    |    |    |    |    |    |    |    |    | 50 |                    |                                   |
| Urban Ecology 2022-23                    |    |    |    |    |    |    |    |    |    |    |    |                    | 40                                |

## Appendix III - Benchmark Analysis

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

### Knowledge and Understanding

|      | BSciEcol1 | BSciEcol2 | BSciEcol3 | BSciEcol4 | BSciEcol5 | BSciEcol6 | BSciEcol7 | BSciEcol8 | BSciEcol9 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO1  | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         |           |
| PO2  | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         |           |
| PO3  | ✓         |           |           |           |           |           |           |           |           |
| PO4  |           |           |           |           |           |           |           |           |           |
| PO5  |           |           |           |           | ✓         |           |           |           |           |
| PO6  |           |           |           |           | ✓         |           |           |           |           |
| PO7  | ✓         |           | ✓         | ✓         |           |           | ✓         |           |           |
| PO8  |           |           |           |           |           |           |           |           |           |
| PO9  |           |           | ✓         |           |           |           | ✓         |           |           |
| PO10 | ✓         |           | ✓         | ✓         |           |           |           |           |           |

|      | BSciEcol10 | BSciEcol11 | BSciEcol12 | BSciEcol13 | BSciEcol14 | BSciEcol15 | BSciEcol16 | BSciEcol17 | BSciEcol18 |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO1  | ✓          | ✓          | ✓          | ✓          | ✓          |            | ✓          | ✓          | ✓          |
| PO2  |            |            |            | ✓          | ✓          |            | ✓          | ✓          | ✓          |
| PO3  |            |            |            |            |            |            |            |            |            |
| PO4  |            |            |            |            |            |            |            |            |            |
| PO5  |            |            |            |            |            |            |            |            |            |
| PO6  |            |            |            |            |            |            |            |            |            |
| PO7  |            | ✓          |            | ✓          | ✓          |            | ✓          | ✓          |            |
| PO8  |            |            |            |            |            |            |            |            |            |
| PO9  |            |            |            | ✓          | ✓          |            |            | ✓          |            |
| PO10 |            |            |            | ✓          |            |            |            |            |            |

|     | BSciEcol19 | BSciEcol20 | BSciGen1 | BSciGen2 | BSciGen3 | BSciGen4 | BSciGen5 | BSciGen6 | BSciGen7 |
|-----|------------|------------|----------|----------|----------|----------|----------|----------|----------|
| PO1 |            |            |          | ✓        |          |          |          |          |          |

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

|      | BSciGen8 | BSciGen9 | BSciGen10 | BSciGen11 | BSciGen12 | BSciGen13 | BSciGen14 | BSciGen15 | BSciGen16 |
|------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO1  |          |          |           |           |           | ✓         |           |           |           |
| PO2  |          |          |           |           |           |           |           |           |           |
| PO3  |          |          |           |           |           |           |           |           |           |
| PO4  |          |          |           |           |           | ✓         |           |           |           |
| PO5  |          |          |           |           |           |           |           |           |           |
| PO6  |          |          |           |           |           | ✓         |           |           |           |
| PO7  |          |          |           |           |           |           |           |           |           |
| PO8  |          |          |           |           |           | ✓         |           |           |           |
| PO9  |          |          |           |           |           | ✓         |           |           |           |
| PO10 |          |          |           |           |           | ✓         |           |           |           |

|      | BSciGen18 | BSciMolec1 | BSciMolec2 | BSciMolec3 | BSciMolec4 | BSciMolec5 | BSciMolec6 | BSciMolec7 | BSciMolec8 |
|------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO1  |           |            |            |            |            |            |            |            |            |
| PO2  |           |            |            |            |            |            |            |            |            |
| PO3  |           |            |            |            |            |            |            |            |            |
| PO4  |           |            |            |            |            |            |            |            |            |
| PO5  |           |            |            |            | ✓          |            |            |            |            |
| PO6  |           |            |            |            | ✓          |            |            |            |            |
| PO7  |           |            |            |            |            |            |            |            |            |
| PO8  |           |            |            |            |            |            |            |            |            |
| PO9  |           |            |            |            |            |            |            |            |            |
| PO10 |           |            |            |            | ✓          |            |            |            |            |

|      | BSciMolec9 | BSciMolec1<br>0 | BSciMolec1<br>1 | BSciMolec1<br>2 | BSciMolec1<br>3 | BSciMolec1<br>4 | BSciMolec1<br>5 | BSciMolec1<br>6 | BSciMolec1<br>7 |
|------|------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| PO1  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO2  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO3  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO4  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO5  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO6  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO7  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO8  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO9  |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO10 |            |                 |                 |                 |                 |                 |                 |                 |                 |

|      | BSciOrg1 | BSciOrg2 | BSciOrg3 | BSciOrg4 | BSciOrg5 | BSciOrg6 | BSciOrg7 | BSciOrg8 | BSciOrg9 |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| PO1  | ✓        |          |          |          | ✓        | ✓        | ✓        |          |          |
| PO2  |          |          |          |          |          |          | ✓        |          |          |
| PO3  |          |          |          |          |          |          |          |          |          |
| PO4  | ✓        |          | ✓        |          |          | ✓        | ✓        | ✓        | ✓        |
| PO5  |          |          |          | ✓        |          |          |          |          |          |
| PO6  |          |          |          | ✓        |          |          |          |          | ✓        |
| PO7  |          |          |          |          |          | ✓        | ✓        |          |          |
| PO8  | ✓        | ✓        |          |          |          |          | ✓        | ✓        | ✓        |
| PO9  |          |          |          |          |          |          | ✓        |          |          |
| PO10 |          |          |          | ✓        | ✓        |          | ✓        | ✓        |          |

|     | BSciOrg10 | BSciOrg11 | BSciOrg12 | BSciOrg13 | BSciOrg14 | BSciOrg15 | BSciOrg16 | BSciOrg17 |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO1 |           |           |           |           |           | ✓         |           | ✓         |
| PO2 |           |           |           |           |           |           |           |           |
| PO3 |           |           |           |           |           |           |           |           |
| PO4 |           | ✓         |           |           |           | ✓         | ✓         | ✓         |
| PO5 |           |           |           |           |           |           |           |           |
| PO6 |           |           |           |           |           |           |           |           |

|      |  |   |   |   |   |   |  |   |
|------|--|---|---|---|---|---|--|---|
| PO7  |  |   |   |   |   |   |  |   |
| PO8  |  | ✓ | ✓ | ✓ |   |   |  | ✓ |
| PO9  |  |   |   |   |   |   |  |   |
| PO10 |  |   |   | ✓ | ✓ | ✓ |  |   |

## Subject Specific Intellectual Skills

|      | BSciEcol1 | BSciEcol2 | BSciEcol3 | BSciEcol4 | BSciEcol5 | BSciEcol6 | BSciEcol7 | BSciEcol8 | BSciEcol9 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO11 |           |           |           |           |           |           |           |           | ✓         |
| PO12 |           |           |           |           |           |           |           |           | ✓         |
| PO13 |           |           |           |           |           |           |           |           |           |
| PO14 |           |           |           |           |           |           |           |           |           |
| PO15 |           |           |           |           |           |           |           |           |           |
| PO16 |           |           |           |           |           |           |           |           |           |

|      | BSciEcol10 | BSciEcol11 | BSciEcol12 | BSciEcol13 | BSciEcol14 | BSciEcol15 | BSciEcol16 | BSciEcol17 | BSciEcol18 |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO11 | ✓          |            |            |            |            |            |            |            |            |
| PO12 | ✓          |            |            |            |            |            |            |            |            |
| PO13 |            |            |            |            |            |            |            |            |            |
| PO14 | ✓          |            |            |            |            |            |            |            |            |
| PO15 | ✓          |            |            |            |            |            |            |            |            |
| PO16 | ✓          |            |            |            |            |            |            |            |            |

|      | BSciEcol19 | BSciEcol20 | BSciGen1 | BSciGen2 | BSciGen3 | BSciGen4 | BSciGen5 | BSciGen6 | BSciGen7 |
|------|------------|------------|----------|----------|----------|----------|----------|----------|----------|
| PO11 | ✓          |            | ✓        |          | ✓        |          |          |          | ✓        |
| PO12 | ✓          |            | ✓        |          | ✓        |          |          |          | ✓        |
| PO13 |            |            |          |          | ✓        |          | ✓        | ✓        |          |
| PO14 | ✓          | ✓          | ✓        | ✓        | ✓        | ✓        |          | ✓        | ✓        |
| PO15 | ✓          | ✓          | ✓        | ✓        | ✓        | ✓        |          |          |          |
| PO16 | ✓          |            | ✓        |          | ✓        |          |          |          |          |

|      | BSciGen8 | BSciGen9 | BSciGen10 | BSciGen11 | BSciGen12 | BSciGen13 | BSciGen14 | BSciGen15 | BSciGen16 |
|------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO11 |          |          | ✓         | ✓         |           | ✓         |           |           |           |
| PO12 |          |          | ✓         | ✓         |           | ✓         |           |           |           |
| PO13 |          |          | ✓         |           | ✓         | ✓         |           |           |           |
| PO14 |          | ✓        |           | ✓         | ✓         | ✓         |           |           | ✓         |
| PO15 |          |          |           | ✓         | ✓         | ✓         |           | ✓         |           |
| PO16 |          |          | ✓         | ✓         |           | ✓         |           |           |           |

|      | BSciGen18 | BSciMolec1 | BSciMolec2 | BSciMolec3 | BSciMolec4 | BSciMolec5 | BSciMolec6 | BSciMolec7 | BSciMolec8 |
|------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO11 | ✓         |            |            |            |            |            | ✓          |            |            |
| PO12 | ✓         |            |            |            |            |            | ✓          |            |            |
| PO13 |           |            |            |            |            |            |            |            |            |
| PO14 | ✓         |            |            |            |            |            |            |            |            |
| PO15 |           |            |            |            |            |            |            |            |            |
| PO16 |           |            |            |            |            |            |            |            |            |

|      | BSciMolec9 | BSciMolec1 | BSciMolec1 | BSciMolec1 | BSciMolec1 | BSciMolec1 | BSciMolec1 | BSciMolec1 | BSciMolec1 |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|      |            | 0          | 1          | 2          | 3          | 4          | 5          | 6          | 7          |
| PO11 |            |            |            |            |            | ✓          |            |            |            |
| PO12 |            |            |            |            |            | ✓          |            |            |            |
| PO13 |            |            |            |            |            |            |            |            |            |
| PO14 |            |            |            |            |            |            |            |            | ✓          |
| PO15 |            |            |            |            |            |            |            |            |            |
| PO16 |            |            |            |            |            | ✓          |            |            |            |

|      | BSciOrg1 | BSciOrg2 | BSciOrg3 | BSciOrg4 | BSciOrg5 | BSciOrg6 | BSciOrg7 | BSciOrg8 | BSciOrg9 |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| PO11 |          |          |          |          |          |          |          |          |          |
| PO12 |          |          |          |          |          |          |          |          |          |
| PO13 |          |          |          |          |          |          |          |          |          |
| PO14 |          |          |          |          |          |          |          |          |          |
| PO15 |          |          |          |          |          |          |          |          |          |
| PO16 |          |          |          |          |          |          |          |          |          |

|      | BSciOrg10 | BSciOrg11 | BSciOrg12 | BSciOrg13 | BSciOrg14 | BSciOrg15 | BSciOrg16 | BSciOrg17 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO11 |           |           |           |           |           |           |           |           |
| PO12 |           |           |           |           |           |           |           |           |
| PO13 |           |           |           |           |           |           |           |           |
| PO14 |           |           |           |           |           |           |           |           |
| PO15 |           |           |           |           |           |           |           |           |
| PO16 |           |           |           |           |           |           |           |           |

## Subject Specific Practical Skills

|      | BSciEcol1 | BSciEcol2 | BSciEcol3 | BSciEcol4 | BSciEcol5 | BSciEcol6 | BSciEcol7 | BSciEcol8 | BSciEcol9 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO17 |           |           |           |           |           |           |           |           | ✓         |
| PO18 |           |           |           |           |           |           |           |           | ✓         |
| PO19 | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         |

|      | BSciEcol10 | BSciEcol11 | BSciEcol12 | BSciEcol13 | BSciEcol14 | BSciEcol15 | BSciEcol16 | BSciEcol17 | BSciEcol18 |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO17 | ✓          |            |            |            |            |            |            |            |            |
| PO18 | ✓          |            |            |            |            |            |            |            |            |
| PO19 | ✓          |            |            |            |            |            |            |            |            |

|      | BSciEcol19 | BSciEcol20 | BSciGen1 | BSciGen2 | BSciGen3 | BSciGen4 | BSciGen5 | BSciGen6 | BSciGen7 |
|------|------------|------------|----------|----------|----------|----------|----------|----------|----------|
| PO17 |            |            | ✓        |          |          |          |          |          |          |
| PO18 | ✓          |            | ✓        |          | ✓        |          |          |          | ✓        |
| PO19 |            |            |          |          |          |          |          |          |          |

|      | BSciGen8 | BSciGen9 | BSciGen10 | BSciGen11 | BSciGen12 | BSciGen13 | BSciGen14 | BSciGen15 | BSciGen16 |
|------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO17 |          |          | ✓         | ✓         |           |           |           |           |           |
| PO18 | ✓        |          |           | ✓         |           |           | ✓         |           |           |
| PO19 |          |          |           |           |           |           |           |           |           |

|  | BSciGen18 | BSciMolec1 | BSciMolec2 | BSciMolec3 | BSciMolec4 | BSciMolec5 | BSciMolec6 | BSciMolec7 | BSciMolec8 |
|--|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
|  |           |            |            |            |            |            |            |            |            |

|      |  |  |  |  |  |  |  |   |  |  |
|------|--|--|--|--|--|--|--|---|--|--|
| PO17 |  |  |  |  |  |  |  | ✓ |  |  |
| PO18 |  |  |  |  |  |  |  | ✓ |  |  |
| PO19 |  |  |  |  |  |  |  |   |  |  |

|      | BSciMolec9 | BSciMolec1<br>0 | BSciMolec1<br>1 | BSciMolec1<br>2 | BSciMolec1<br>3 | BSciMolec1<br>4 | BSciMolec1<br>5 | BSciMolec1<br>6 | BSciMolec1<br>7 |
|------|------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| PO17 |            |                 |                 |                 |                 | ✓               |                 |                 |                 |
| PO18 |            |                 |                 |                 |                 | ✓               |                 |                 | ✓               |
| PO19 |            |                 |                 |                 |                 |                 |                 |                 |                 |

|      | BSciOrg1 | BSciOrg2 | BSciOrg3 | BSciOrg4 | BSciOrg5 | BSciOrg6 | BSciOrg7 | BSciOrg8 | BSciOrg9 |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| PO17 |          |          |          |          |          |          |          |          |          |
| PO18 |          |          |          |          |          |          |          |          |          |
| PO19 |          |          |          |          |          |          |          |          |          |

|      | BSciOrg10 | BSciOrg11 | BSciOrg12 | BSciOrg13 | BSciOrg14 | BSciOrg15 | BSciOrg16 | BSciOrg17 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO17 |           |           |           |           |           |           |           |           |
| PO18 |           |           |           |           |           |           |           |           |
| PO19 |           |           |           |           |           | ✓         | ✓         | ✓         |

## Transferable Skills and Attributes

|      | BSciEcol1 | BSciEcol2 | BSciEcol3 | BSciEcol4 | BSciEcol5 | BSciEcol6 | BSciEcol7 | BSciEcol8 | BSciEcol9 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO20 |           |           |           |           |           |           |           |           |           |
| PO21 |           |           |           |           |           |           |           |           |           |
| PO22 |           |           |           |           |           |           |           |           |           |
| PO23 |           |           |           |           |           |           |           |           | ✓         |
| PO24 |           |           |           |           |           |           |           |           |           |
| PO25 |           |           |           |           |           |           |           |           |           |
| PO26 |           |           |           |           |           |           |           |           |           |
| PO27 |           |           |           |           |           |           |           |           | ✓         |



|      | BSciEcol10 | BSciEcol11 | BSciEcol12 | BSciEcol13 | BSciEcol14 | BSciEcol15 | BSciEcol16 | BSciEcol17 | BSciEcol18 |
|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO20 | ✓          |            |            |            |            |            |            |            |            |
| PO21 |            |            |            |            |            |            |            |            |            |
| PO22 | ✓          |            |            |            |            |            |            |            |            |
| PO23 |            |            |            |            |            |            |            |            |            |
| PO24 |            |            |            |            |            |            |            |            |            |
| PO25 |            |            |            |            |            |            |            |            |            |
| PO26 | ✓          |            |            |            |            |            |            |            |            |
| PO27 |            |            |            |            |            |            |            |            |            |

|      | BSciEcol19 | BSciEcol20 | BSciGen1 | BSciGen2 | BSciGen3 | BSciGen4 | BSciGen5 | BSciGen6 | BSciGen7 |
|------|------------|------------|----------|----------|----------|----------|----------|----------|----------|
| PO20 |            |            | ✓        |          | ✓        | ✓        |          | ✓        | ✓        |
| PO21 | ✓          |            | ✓        |          | ✓        |          |          |          | ✓        |
| PO22 |            |            |          |          |          |          |          |          |          |
| PO23 |            |            |          |          | ✓        |          |          |          |          |
| PO24 |            |            |          |          |          |          |          |          |          |
| PO25 |            |            |          |          |          |          | ✓        |          |          |
| PO26 |            |            |          |          |          |          |          | ✓        |          |
| PO27 | ✓          |            |          |          |          |          | ✓        |          |          |

|      | BSciGen8 | BSciGen9 | BSciGen10 | BSciGen11 | BSciGen12 | BSciGen13 | BSciGen14 | BSciGen15 | BSciGen16 |
|------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO20 |          |          |           | ✓         | ✓         | ✓         |           | ✓         |           |
| PO21 |          |          |           |           |           |           | ✓         |           |           |
| PO22 |          |          |           |           |           |           | ✓         |           |           |
| PO23 |          |          |           | ✓         |           |           |           |           | ✓         |
| PO24 |          |          |           |           |           |           |           |           | ✓         |
| PO25 |          | ✓        |           |           | ✓         |           |           |           | ✓         |
| PO26 |          |          |           |           | ✓         |           |           |           |           |
| PO27 |          |          |           |           | ✓         |           |           |           | ✓         |

|      | BSciGen18 | BSciMolec1 | BSciMolec2 | BSciMolec3 | BSciMolec4 | BSciMolec5 | BSciMolec6 | BSciMolec7 | BSciMolec8 |
|------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| PO20 |           |            |            |            |            |            |            |            |            |

|      |   |  |  |  |  |  |   |  |  |
|------|---|--|--|--|--|--|---|--|--|
| PO21 | ✓ |  |  |  |  |  | ✓ |  |  |
| PO22 | ✓ |  |  |  |  |  |   |  |  |
| PO23 | ✓ |  |  |  |  |  |   |  |  |
| PO24 |   |  |  |  |  |  |   |  |  |
| PO25 |   |  |  |  |  |  |   |  |  |
| PO26 |   |  |  |  |  |  |   |  |  |
| PO27 |   |  |  |  |  |  |   |  |  |

|      | BSciMolec9 | BSciMolec1<br>0 | BSciMolec1<br>1 | BSciMolec1<br>2 | BSciMolec1<br>3 | BSciMolec1<br>4 | BSciMolec1<br>5 | BSciMolec1<br>6 | BSciMolec1<br>7 |
|------|------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| PO20 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO21 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO22 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO23 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO24 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO25 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO26 |            |                 |                 |                 |                 |                 |                 |                 |                 |
| PO27 |            |                 |                 |                 |                 |                 |                 |                 |                 |

|      | BSciOrg1 | BSciOrg2 | BSciOrg3 | BSciOrg4 | BSciOrg5 | BSciOrg6 | BSciOrg7 | BSciOrg8 | BSciOrg9 |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| PO20 |          |          |          |          |          |          |          |          |          |
| PO21 |          |          |          |          |          |          |          |          |          |
| PO22 |          |          |          |          |          |          |          |          |          |
| PO23 |          |          |          |          |          |          |          |          |          |
| PO24 |          |          |          |          |          |          |          |          |          |
| PO25 |          |          |          |          |          |          |          |          |          |
| PO26 |          |          |          |          |          |          |          |          |          |
| PO27 |          |          |          |          |          |          |          |          |          |

|      | BSciOrg10 | BSciOrg11 | BSciOrg12 | BSciOrg13 | BSciOrg14 | BSciOrg15 | BSciOrg16 | BSciOrg17 |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PO20 |           |           |           |           |           |           |           |           |
| PO21 |           |           |           |           |           |           |           |           |
| PO22 |           |           |           |           |           |           |           |           |

|      |  |  |  |  |  |  |  |  |
|------|--|--|--|--|--|--|--|--|
| PO23 |  |  |  |  |  |  |  |  |
| PO24 |  |  |  |  |  |  |  |  |
| PO25 |  |  |  |  |  |  |  |  |
| PO26 |  |  |  |  |  |  |  |  |
| PO27 |  |  |  |  |  |  |  |  |

## **Appendix IV: Benchmark Benchmark Statement(s)**

**BSciEcol1** - *Demonstrate knowledge of biogeochemical cycles and pathways*

**BSciEcol2** - *Describe and exemplify nutrient and energy flow through individuals, populations and communities*

**BSciEcol3** - *Describe the structure, biogeography and diversity of ecosystems in relation to climate, geology, soils, palaeo-historical, taxonomic and evolutionary factors*

**BSciEcol4** - *Describe and exemplify patterns of distribution of organisms in relation to biotic and abiotic factors*

**BSciEcol5** - *Demonstrate knowledge of population genetics, dynamics and interactions, and associated theoretical models*

**BSciEcol6** - *Demonstrate knowledge of community structure, development, biodiversity, and associated theoretical models*

**BSciEcol7** - *Show awareness of human interactions with natural populations and ecosystems, including habitat modification, pollution, exploitation and conservation*

**BSciEcol8** - *Show awareness of the applied significance of species as resources and as damage-causing organisms*

**BSciEcol9** - *Carry out routine investigations as instructed, using appropriate ecological and/or molecular methodologies and data analyses*

**BSciEcol10** - *Exhibit practical fieldwork skills including but not limited to ecological survey techniques, taxonomic identification of organisms and ecological impact assessments*

**BSciEcol11** - *Demonstrate comprehension and intelligent engagement with biogeochemical cycles and pathways*

**BSciEcol12** - *Discuss and demonstrate comprehension of nutrient and energy flow through individuals, populations and communities*

**BSciEcol13** - *Understand the structure, biogeography and diversity of ecosystems in relation to climate, geology, soils, palaeo-historical, taxonomic and evolutionary factors*

**BSciEcol14** - *Discuss and critically analyse patterns of distribution of organisms in relation to biotic and abiotic factors*

**BSciEcol15** - *Demonstrate comprehension and critical analysis of population processes, dynamics and interactions, and associated models*

**BSciEcol16** - *Demonstrate comprehension and critical analysis of community structure, development, biodiversity, and associated models*

**BSciEcol17** - *Critically analyse and evaluate the effects of such human interactions on natural populations and ecosystems*

**BSciEcol18** - *Evaluate the impacts of harvesting resources, controlling pest/pathogens and different approaches to species management*

**BSciEcol19** - *Apply critical understanding of ecological methodologies and data analyses*

**BSciEcol20** - *Demonstrate an appreciation of the multidisciplinary approach required to address ecological and environmental issues*

**BSciGen1** - *Experience and competence in a broad range of appropriate practical techniques and skills relevant to the biosciences including data collection, analysis and interpretation of those data, and testing of hypotheses and the ability to place the work...*

**BSciGen2** - *The ability to explain biological phenomena at a variety of levels (from molecular to ecological systems) and how evolutionary theory is relevant to their area of study*

**BSciGen3** - *The ability to plan, execute and present a piece of hypothesis-driven work within a supported framework in which qualities such as time management, problem solving, and independence are evident*

**BSciGen4** - *The ability to access and evaluate bioscience information from a variety of sources and to communicate the principles both orally and in writing in a way that is organised and topical, and recognises the limits of current hypotheses*

**BSciGen5** - *An appreciation of ethical issues and how they underpin professional integrity and standards*

**BSciGen6** - *An appreciation of the impact on society of advances in the biosciences*

**BSciGen7** - *The ability to record data accurately, and to carry out basic manipulation of data (including qualitative data and statistical analysis, when appropriate)*

**BSciGen8** - *An understanding of the use of bioinformatics approaches in the analysis of large datasets*

**BSciGen9** - *Strategies that enable them to update their knowledge of the biosciences*

**BSciGen10** - *An awareness of professional standards, including Good Laboratory Practice<sup>12</sup> for data collection, recording and interpretation*

**BSciGen11** - *Plan, execute and present an independent piece of work, in which qualities such as time management, problem solving and independence are evident, as well as interpretation and critical awareness of the quality of evidence*

**BSciGen12** - *Construct reasoned arguments to support their position on the ethical and social impact of advances in the biosciences*

**BSciGen13** - *Demonstrate a secure and accurate understanding of the explanation of biological phenomena at a variety of levels (from molecular to ecological systems) and explain the relationship of evolutionary theory to their area of study*

**BSciGen14** - *Apply relevant advanced numerical skills to biological data*

**BSciGen15** - *Communicate science to peers and non-scientists*

**BSciGen16** - *Demonstrate well developed strategies for updating, maintaining and enhancing their knowledge of the biosciences, including cross-disciplinary awareness*

**BSciGen18** - *Access bioscience databases and use appropriate selection criteria to mine, manipulate and interpret data*

**BSciMolec1** - *Know and explain the structure and function of various types of cells in unicellular and multicellular organisms, the structure and function of cell membranes,*

**BSciMolec2** - *Express relevant biological reactions in chemical terms*

**BSciMolec3** - *Explain the chemistry and structure of the major biological macromolecules and how that determines their biological properties*

**BSciMolec4** - *Explain how the principles of genetics underlie much of the basis of molecular biology*

**BSciMolec5** - *Explain the principles of gene expression and how it is controlled*

**BSciMolec6** - *Explain a range of appropriate and relevant experimental techniques and how they are used; and be able to perform some of them*

**BSciMolec7** - *Describe cell metabolism, including the main anabolic and catabolic pathways*

**BSciMolec8** - *Describe protein structures and functions and their control mechanisms*

**BSciMolec9** - *Understand the chemistry that underlies biochemical reactions and the techniques used to investigate them*

**BSciMolec10** - *Explain the principles that determine the three-dimensional structure of biological macromolecules and give detailed examples of how structure enables function*

**BSciMolec11** - *Demonstrate a critical understanding of the molecular basis of genetics and explain some detailed examples*

**BSciMolec12** - *Demonstrate 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*

**BSciMolec13** - *Demonstrate knowledge of a wide range of cells (both prokaryotic and eukaryotic) and explain critically how their properties suit them for their biological function, and how they could be investigated experimentally*

**BSciMolec14** - *Devise and evaluate suitable experimental methods for the investigation of relevant areas of biochemistry and molecular biology*

**BSciMolec15** - *Demonstrate a critical understanding of essential features of cell metabolism and its control, including topics such as energy and signal transduction, respiration and photosynthesis (including knowledge and experience of some experimental...*

**BSciMolec16** - *Explain 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*

**BSciMolec17** - *Mine, manipulate and interpret data from small molecule and/or macromolecular databases*

**BSciOrg1** - *Describe the structure and diversity of the organisms studied, including their modes of reproduction, development and life history of the organisms*

**BSciOrg2** - *Describe mechanisms for the life processes and appreciate how the physiology of an organism fits it for its environment*

**BSciOrg3** - *Demonstrate an appreciation of the integration of metabolism*

**BSciOrg4** - *Demonstrate knowledge of the basic genetic principles relating to, and evolution of, the organisms studied*

**BSciOrg5** - *Describe how organisms are classified and identified*

**BSciOrg6** - *Explain the interactions of organisms with each other and the environment*

**BSciOrg7** - *Describe the place of the organisms studied in the living world*

**BSciOrg8** - *Demonstrate an appreciation of the importance of the 'behaviour' of the organisms studied*

**BSciOrg9** - *Describe and analyse the impact of external influences on growth and reproduction, and explain reproductive strategies*

**BSciOrg10** - *Demonstrate an understanding of the interactions of structure and metabolic function at cellular and organism level*

**BSciOrg11** - *Describe and critically evaluate the evidence for the mechanisms of life processes*

**BSciOrg12** - *Demonstrate an understanding of the significance of internal and external influences*

**BSciOrg13** - *Describe and analyse patterns of inheritance and complex genetic interactions relating to the lives and evolution of the organisms studied*

**BSciOrg14** - *Explain the methods and principles underlying taxonomy and classification*

**BSciOrg15** - *Describe the principles and processes governing interactions of organisms and their environment*



**BSciOrg16** - *Critically analyse the contribution of the organisms to the biosphere*

**BSciOrg17** - *Critically assess the contribution of 'behavioural patterns' to survival and success*