

## Programme Specification: Undergraduate

### For students starting in Academic Year 2017/2018

#### 1. Course Summary

<b>Names of programme(s) and award title(s)</b>	BSc (Hons) Biology BSc (Hons) Biology with International Year (see Annex A for details) BSc (Hons) Biology with Work Placement BSc (Hons) Studies in Biology BSc (Hons) Studies in Biology with Work Placement BSc (Hons) Studies in Biology with International Year
<b>Award type</b>	Dual Honours/Major/Minor  <i>NB: all students who study a science Principal subject are candidates for the degree of Bachelor of Science (with Honours) (BSc Hons) irrespective of their second Principal subject.</i>
<b>Mode of study</b>	Full time
<b>Framework of Higher Education Qualification (FHEQ) level of final award</b>	Level 6
<b>Duration</b>	3 years 4 years if taken with an Applied Life Sciences Placement or the International Year option
<b>Location of study</b>	Keele University – main campus
<b>Accreditation (if applicable)</b>	The Major Route and the Dual Honours Biology and Biochemistry Route are accredited by the Royal Society of Biology. For further details see section 12.
<b>Regulator</b>	Office for Students (OfS)
<b>Tuition Fees</b>	<b>UK/EU students:</b> Fee for 2017/18 is £9,250*  <b>International students:</b> Fee for 2017/18 is £14,150** <i>(if combined with a non-laboratory-based Principal Subject)</i> <i>or</i> £15,250** <i>(if combined with a laboratory-based Principal Subject)</i>  The fee for the placement year is calculated at 20% of the standard year fee

\* These fees are regulated by Government. We reserve the right to increase fees in subsequent years of study in response to changes in government policy and/or changes to the law. If permitted by such change in policy or law, we may increase your fees by an inflationary amount or such other measure as required by government policy or the law. Please refer to the accompanying Student Terms & Conditions. Further information on fees can be found at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

\*\* We reserve the right to increase fees in subsequent years of study by an inflationary amount. Please refer to the accompanying Student Terms & Conditions for full details. Further information on fees can be found at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

	The fee for the international year abroad is calculated at 15% of the standard year fee
<b>Additional Costs</b>	Refer to section 18

**How this information might change:** Please read the important information at <http://www.keele.ac.uk/student-agreement/>. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.

## 2. What is a Dual Honours programme?

Dual Honours degrees are degrees that are taken in two different subjects, resulting in an *X and Y* degree title, for example *Biology and Mathematics*. If you are taking a Dual Honours programme, these will be the two subjects you applied for. These are referred to as your Principal Subjects.

In a Dual Honours degree you must take at least 120 credits in each Principal Subject, accrued over all three levels of study, with at least 30 credits in Year 1 (Level 4) and at least 45 credits in each of Years 2 and 3 (Levels 5 and 6) in each of two Principal Subjects. The remaining available credits can be filled with modules from these subjects or other subjects entirely.

### What is a Major/Minor programme?

Major/Minor degrees are degrees that are taken in two different subjects, much like a Dual Honours degree, except that you will specialise in the Major subject. In a Major/Minor degree you will need at least 225 credits in your Major subject over your three years of study with at least two modules (30 credits) taken each year in your Major Subject, although some Principal Subjects will require you to take more than this and this will be stated in the relevant programme specification. You will also need 90 credits in your Minor subject with a minimum of 30 credits (two modules) taken in Year 1 (Level 4) and 45 credits (three modules) taken in Year 2 (Level 5).

Students taking the Minor Route in Biology might not necessarily be able to demonstrate that they have achieved all of the Programme's learning outcomes.

## 3. Overview of the Programme

The Programme provides a broad and varied coverage of modern biology, with emphasis on whole organisms. In the first year you will look at life at the cellular and organismal levels, at inheritance and then study either Ecology and Environment or Human Physiology and Pathology. In the second year, the focus shifts to the adaptability of life to differing environments and modes of living, and you will also learn how to design an experiment and analyse data. You can also begin to tailor your degree to your own interests, with the module options available including human genetics, Living Together, Animal Adaptations and Neurodevelopment, as well as Current Topics in Biology, Health and the Environment and other modules. Students may combine Biology with the Principal Programme in Biochemistry if they also wish to have a detailed coverage of biochemical and molecular aspects of biology. Training is also provided in employability skills that will help you to reach your potential in your chosen career, whether or not this is in biology.

## 4. Aims of the Programme

The broad aims of the programme are to:

- provide students with knowledge, understanding and skills relevant to biology;
- produce skilled and motivated graduates who are suitably prepared for further study or for employment within or outside their subject;
- cultivate interest in biology, particularly at the organismal level, within a caring and intellectually stimulating environment;

- promote the development of a range of employability skills, for use in all areas where numeracy and an objective, scientific approach to problem-solving are valued.

## 5. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject knowledge and understanding
- Subject specific skills
- Intellectual skills
- Key or transferable skills (including employability skills)

In Dual Honours Biology and in Biology (Major) successful students will achieve all the Intended Learning Outcomes (ILOs) listed below. In the Biology (Minor) route they will achieve all the ILOs with the exception of those listed as being taught in level 6 modules only (I6, I7 and I8) and will achieve others taught partly at level 6 to a lesser extent.

### Subject knowledge and understanding

Successful students will be able to demonstrate knowledge and understanding of:

- U1 the diversity of life and its evolution from the geological past to the present
- U2 the complexity of biological processes and mechanisms of life at a range of hierarchical levels (molecular, cellular, organismal, community, ecosystem)
- U3 the influence of human activities on living systems (and the converse)
- U4 the basic experimental skills appropriate to the discipline of biology
- U5 the approaches to acquiring, interpreting, analysing biological data from a variety of sources, including the use of statistics
- U6 the contribution of research to the development of biological knowledge
- U7 the dynamic, plural and contested nature of the discipline and an awareness of the philosophical and ethical issues involved
- U8 the use of biological terminology, nomenclature and classification systems
- U9 the relevance of biology to practical problems and improving the quality and sustainability of life
- U10 the applicability of the biosciences to the careers to which graduates will be progressing

### Subject specific skills

Successful students will be able to:

- S1 use a range of practical techniques for the acquisition, analysis and critical evaluation of biological information
- S2 use a range of practical laboratory and field techniques to ensure competence in basic experimental skills
- S3 sample, record and analyse data in the field and/or laboratory in a manner that ensures validity, accuracy, calibration, precision, replicability and highlights uncertainty during collection
- S4 formulate a hypothesis, design, plan, conduct, collate, analyse, report and evaluate on a biological investigation

- S5 recognise philosophical, moral and ethical issues relevant to the subject, and appreciate the need for ethical standards and professional codes of conduct
- S6 undertake field and/or laboratory investigations of living systems in a responsible, safe and ethical manner, paying due attention to standard procedures (e.g. risk assessment, health and safety regulations, animal welfare, informed consent)

### **Intellectual skills**

Successful students will be able to:

- I1 assess the merits of contrasting theories, paradigms, concepts or principles
- I2 think independently, set tasks and solve problems by a variety of methods
- I3 make reasoned decisions and develop reasoned arguments
- I4 obtain and interpret several lines of subject-specific evidence to formulate and test hypotheses
- I5 make critical interpretations, evaluations and judgements of data and text
- I6 analyse, synthesise and summarise information critically, including published research or reports
- I7 apply biological understanding to familiar and unfamiliar problems, and emphasise the interdisciplinary nature of science and the validity of different points of view
- I8 take responsibility for their own learning and reflect upon that learning

### **Key or transferable skills (including employability skills)**

Successful students will be able to:

- E1 develop an adaptable, flexible, sustainable and effective approach to study and work, including time management, creativity and intellectual integrity
- E2 acquire, analyse, synthesise, summarise and present information and ideas from a wide range of sources: textual, numerical, verbal, graphical
- E3 prepare, process, interpret and present data using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually
- E4 use the internet and other electronic sources critically as a means of communication and a source of information
- E5 cite and reference work in an appropriate manner, avoiding issues with plagiarism
- E6 communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language
- E7 develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills
- E8 work with others to achieve an objective in a respectful manner that is accepting of the viewpoints and opinions of others and evaluates the roles and development of team members
- E9 motivate themselves and sustain that motivation over an extended period of time
- E10 identify and work towards targets for personal, academic and career development

### **Keele Graduate attributes**

Engagement with this programme will enable you to develop your intellectual, personal and professional capabilities. At Keele, we call these our ten Graduate Attributes and they include independent thinking, synthesizing information, creative problem solving, communicating clearly, and appreciating the social, environmental and global implications of your studies and activities. Our educational programme and learning environment is designed to help you to become a well-rounded graduate who is capable of making a positive and valued contribution in a complex and rapidly changing world, whichever spheres of life you engage in after your studies are completed.

Further information about the Keele Graduate Attributes can be found here: <http://www.keele.ac.uk/journey/>

## 6. How is the Programme taught?

Learning and teaching methods used on the programme vary according to the subject matter and level of the module. They include the following:

- **Traditional lectures** where the lecturer provides students with a framework for reading and independent study. Some lecture classes may feature guest speakers working in biology
- **Interactive learning** in large classes where students have the opportunity to work together in smaller groups, interact with the lecturer and reflect on their own learning. Interactive lectures may involve the use of voting systems or involve students in answering quick quizzes or writing short summaries
- **Practical classes** in laboratories are particularly important and involve the study and observation of biological material and provide training in a wide range of research techniques
- **Fieldwork** involves the study and observation of a wide range of living organisms in their communities and provides training in a range of field techniques
- **Tutorials** and seminars in small groups of students where key issues can be discussed in more depth. Students are expected to play a full part and, occasionally, to lead these discussions. Some tutorials and seminars consist largely of student presentations and many are based on scientific papers studied in advance
- **Independent study** based on directed reading from text books, research papers and research reviews
- **Web-based learning** using Keele University's virtual learning environment (KLE). The KLE is used to give students easy access to a wide range of resources and research tools, and as a platform for online discussions and quizzes
- **The experimental project** module in the final year provides the opportunity to undertake a piece of independent experimental research supervised and supported by a member of staff and usually within a research group

Apart from these formal activities, students are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with their Personal Tutors or module lecturers on a one-to-one basis.

These learning and teaching methods enable students to achieve the learning outcomes of the programme in a variety of ways. For example:

- Lectures and independent study allow students to gain knowledge and understanding of the diversity of life and the complexity of biological processes.
- Seminars, tutorials and online discussions provide opportunities for students to ask questions about, and suggest answers to biological questions, and to present their own ideas to members of staff and other students using an appropriate medium of communication.
- Interactive lectures, seminars, tutorials and web-based activities encourage students to reflect on their own learning and take responsibility for its development by addressing areas of difficulty, perhaps by

discussing them with their fellow students or by getting additional help from a member of staff.

- Laboratory practicals allow students to observe, analyse and interpret biological processes and use a range of techniques.
- Undertaking an experimental project with the support of an experienced researcher allows students to formulate relevant research questions and devise, carry out and analyse experiments to answer them.

## **7. Teaching Staff**

Our core teaching staff are mainly from the School of Life Sciences. Teaching staff from the School of Pharmacy, School of Medicine and the University Hospitals of North Midlands NHS Trust also contribute to the Programme. All staff members are active in research or scholarship. Of the current academic staff in the School, a number have recognised or accredited teaching qualifications, are Fellows of the Higher Education Academy (HEA) and are Senior Fellows of the HEA.

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

## **8. What is the Structure of the Programme?**

The academic year runs from September to June and is divided into two semesters. The number of weeks of teaching will vary from course to course, but you can generally expect to attend scheduled teaching sessions between the end of September and mid-December, and from mid-January to the end of April.

Our degree courses are organised into modules. Each module is usually a self-contained unit of study and each is usually assessed separately with the award of credits on the basis of 1 credit = 10 hours of student effort. An outline of the structure of the programme is provided in the tables below.

There are four types of module delivered as part of this programme. They are:

- Compulsory core module – a module that you are required to study on this course;
- Optional core module – these allow you some limited choice of what to study from a list of modules;
- Programme approved elective module – subject-related modules that count towards the number of subject credits required by your degree;
- Free-standing elective module – a free choice of modules that count towards the overall credit requirement but not the number of subject-related credits.

### **Dual Honours**

All dual honours pathways must include a minimum of 45 subject related credits (from either compulsory or optional or programme approved electives) in Year 2 (Level 5) and Year 3 (Level 6).

Students take four Biology modules at Levels 4 and 5, two in each semester. At Level 5, there is also the option of studying abroad for one of the two semesters, or for a whole academic year between levels 5 and 6. At Level 6, students take four modules in Biology, of which one must be an independent study module: Life Sciences Experimental Project or Applied Life Sciences Placement. Dual Honours students combining Biology with Biochemistry must take a 30-credit ISP (Independent Study Project), i.e. a Double Applied Life Sciences Placement or a Life Sciences Double Experimental Project (with research skills assessment) or a Life Sciences Double Experimental Project

### **Major Route Biology**

The Keele degree structure indicates that students must accumulate at least 225 credits for a major route subject across all three years and at least 90 credits (at least 45 at level 5) in the minor subject. Students take four Biology modules in Years 1 and 2, two from each semester. In Year 2, there is also the option of studying abroad for one of the two semesters or for one academic year between Levels 5 and 6. In Year 3, students study either eight modules in Biology, or seven modules in Biology and one in their other subject or a Free-standing Elective Module.

The Biology modules must include a 30 credit Life Sciences Double Experimental Project or 30 credit Applied Life Sciences Placement. The major route through the programme is designed to educate students to the level of **Bachelor of Science with Honours in Biology Accredited by the Royal Society of Biology**. Consequently, the expectation is that students will complete the full programme of study obtaining 360 credits, **which must include a 30 credit ISP (experimental project or placement)**. If students are unable to achieve 120 credits within the BSc (Hons) level 6, particularly if they are unable to achieve a pass mark in the 30 ISP, their degree title will not include the words "Accredited by the Royal Society of Biology".

### Minor Route Biology

To achieve a minor award, the Keele degree structure stipulates that students must accumulate at least 90 credits in the minor subject across all three years, with at least 45 of these at level 5. Students take four Biology modules at Levels 4 and 5, two from each semester. At level 5, there is also the option of studying abroad for one of the two semesters or for an academic year between Levels 5 and 6. At level 6, students study either no modules in Biology and eight in their other subject or one module in Biology and seven in their other subject. The Biology modules may not include any of the independent study modules: Life Science Experimental Project, Applied Life Sciences Placement.

Note that many modules are shared with students on other courses, such as Biochemistry, Biomedical Science, Human Biology or Neuroscience.

### Year 1 (Level 4)

Compulsory Core modules	Credits	Optional Core / Programme Approved Elective modules	Credits
Diversity of Life	15	Ecology and Environment	15
Genetics and Evolution	15	Human Physiology and Pathology	15
Cell and Molecular Biology	15		

### Year 2 (Level 5)

Compulsory Core modules	Credits	Optional Core / Programme Approved Elective modules	Credits
Life at the Extremes*	15	Animal Adaptations	15
Research and Analytical Skills	15	Human Genetics	15
Life at the Extremes (Semester two)***	15		
		Living Together: Behaviour, Cooperation and Conflict	15
		Nutrition and Energy Balance	15
		Health and the Environment	15
		Current Topics in Biology	15
		Microbes, Viruses and Parasites**	15
		Study Abroad Modules	30

\*This core module includes a field course

\*\*This module is a prerequisite for Human Parasitology at Level 6

\*\*\* This module is compulsory core for students who chose to study abroad in semester one of level 5

## Year 3 (Level 6)

Compulsory Core modules	Credits	Optional Core / Programme Approved Elective modules	Credits
None		Applied Insect Ecology	15
		Conservation Biology	15
		Human Parasitology	15
		Tropical Biology Field Course	15
		Communication Skills for Biologists	15
		Applied Regenerative Medicine	15
		Trees in their Environment	15
		Human Evolution	15
		Cancer Biology	
		Life Sciences Research Project with Skills Assessment (Experimental) <sup>2</sup>	15 or 30
		Life Sciences Double Research Project with Skills Assessment <sup>2</sup>	
		Life Sciences Dissertation <sup>4</sup>	
		Applied Life Sciences Placement <sup>3</sup>	
		Double Applied Life Sciences Placement <sup>3</sup>	

<sup>2</sup> These are 15 or 30 credit modules consisting of 60 or 120 hrs of experimental work and a 5,000 or 9,000 word report. Major Route students entering Level 6 from September 2016 onwards will only be permitted to take a double Life Sciences Research Project or a Double Applied Life Sciences Placement. Dual Honours Students combining Biology and Biochemistry may take a Double Life Sciences Experimental Project,

<sup>3</sup> This is a 15 or 30 credit module consisting of a 5,000 or 9,000 word report of the project work carried out on the Applied Life Sciences Placement. It replaces the experimental project. The Double Applied Life Sciences Placement is only available to Major Route Students and Dual Honours students taking Biology and Biochemistry.

<sup>4</sup> This is a 15 credit module that Dual Honours students combining with a non-life sciences subject may take **instead of** the single experimental research project **or** placement. Major Route students may be permitted to take it in addition to the double experimental project.

For further information on the content of modules currently offered please visit:

[www.keele.ac.uk/recordsandexams/az](http://www.keele.ac.uk/recordsandexams/az)

### Alternative Awards

Students who do not pass the 30 credit Experimental Research Project or the 30 credit Applied Life Science Placement but who have enough credits to obtain a degree will be awarded BSc (Hons) Studies in Biology and XXX (or Biology with XXX). This degree title is not accredited by the Royal Society of Biology.

### Learning Outcomes

The tables below sets out what students learn in the Programme, the modules in which that learning takes place, and the main ways in which students are assessed on their learning. In Years 1 and 2 these learning outcomes are achieved mainly in the compulsory core modules, which all students are required to take. Some of these outcomes are also achieved in the optional core modules, together with other outcomes not stated here. In Year 3 the stated outcomes are achieved by taking the dissertation/project modules and any of the taught modules offered in each semester. Core material across biology is covered in years 1 and 2, whereas students specialise in their choice of topics in year 3 and cover topics in detail.

<b>Subject Knowledge and Understanding</b>		
<b>Learning Outcome</b>	<b>Module in which this is delivered</b>	<b>Principal forms of assessment (of the Level Outcome) used</b>
<i>Successful students will be able to demonstrate knowledge &amp; understanding of:</i>		
U1. the diversity of life and its evolution from the geological past to the present	All modules, particularly Diversity of Life, Genetics and Evolution, and Life at the Extremes	All assessments
U2. the complexity of biological processes and mechanisms of life at a range of hierarchical levels (molecular, cellular, organismal, community, ecosystem)	All modules, particularly Cell and Molecular Biology, Diversity of Life, and Life at the Extremes	All assessments
U3. the influence of human activities on living systems (and the converse)	All modules, particularly Ecology and Environment and Conservation Biology	All assessments
U4. the basic experimental skills appropriate to the discipline of biology	All modules, particularly Diversity of Life, Genetics and Evolution and Life at the Extremes	Multiple-choice class tests and examinations, lab reports, project reports, dissertations
U5. the approaches to acquiring, interpreting, analysing biological data from a variety of sources, including the use of statistics	All modules, particularly Research and Analytical Skills and Life at the Extremes	Lab and field reports, project reports, dissertations
U6. the contribution of research to the development of biological knowledge	All modules, particularly those at level 6	Essays, reports, examinations, project reports, dissertations
U7. the dynamic, plural and contested nature of the discipline and an awareness of the philosophical and ethical issues involved	All modules, particularly those at level 6	Essays, reports, examinations, project reports, dissertations
U8. the use of biological terminology, nomenclature and classification systems	All modules, particularly Life at the Extremes	All assessments
U9. the relevance of biology to practical problems and improving the quality and sustainability of life	All modules, particularly those at level 6	Essays, reports, examinations, project reports, dissertations

<b>Subject Specific Skills</b>		
<b>Learning Outcome</b>	<b>Module in which this is delivered</b>	<b>Principal forms of assessment (of the Level Outcome) used</b>
<i>Successful students will be able to:</i>		
S1. use a range of practical techniques for the acquisition, analysis and critical evaluation of biological information	All modules with practical sessions, particularly Research and Analytical Skills	Laboratory reports, laboratory performance, data analysis exercises, project reports, dissertations
S2. use a range of practical laboratory and field techniques to	All modules with practical sessions, as well as Life at the Extremes and	Laboratory reports, laboratory performance, data analysis

ensure competence in basic experimental skills	the Life Sciences Research Projects or Applied Life Sciences Placements.	exercises, project reports, dissertations
S3. sample, record and analyse data in the field and/or laboratory in a manner that ensures validity, accuracy, calibration, precision, replicability and highlights uncertainty during collection	All modules with practical sessions, particularly Life at the Extremes and Research and Analytical Skills	Laboratory reports, laboratory performance, data analysis exercises, project reports, dissertations
S4. formulate a hypothesis, design, plan, conduct, collate, analyse, report and evaluate on a biological investigation	All modules with practical sessions, particularly Life at the Extremes and Research and Analytical Skills. Also the Life Sciences Research Projects or Applied Life Sciences Placements.	Laboratory reports, laboratory performance, data analysis exercises, project reports, dissertations
S5. recognise philosophical, moral and ethical issues relevant to the subject, and appreciate the need for ethical standards and professional codes of conduct	Genetics and Evolution, Ecology and Environment, Conservation Biology, Life Sciences Research Projects, Applied Life Sciences Placements.	Dissertations, multiple choice tests
S6. undertake field and/or laboratory investigations of living systems in a responsible, safe and ethical manner, paying due attention to standard procedures (e.g., risk assessment, health and safety regulations, animal welfare, informed consent)	All modules with practical sessions and Life at the Extremes, Conservation Biology, Life Sciences Research Projects and Applied Life Sciences Placements.	Laboratory reports, project reports

<b>Intellectual Skills</b>		
<b>Learning Outcome</b>	<b>Module in which this is delivered</b>	<b>Principal forms of assessment (of the Level Outcome) used</b>
<i>Successful students will be able to:</i>		
11. assess the merits of contrasting theories, paradigms, concepts or principles	All modules, particularly those at level 6	Essays, reports, examinations, project reports, dissertations, literature reviews
12. think independently, set tasks and solve problems by a variety of methods	All modules with practical sessions, Life at the Extremes, Life Sciences Research Projects and Applied Life Sciences Placements.	Laboratory reports, project reports, dissertations
13. make reasoned decisions and develop reasoned arguments	All modules, particularly those at level 6	Essays, project reports, dissertations, literature reviews
14. obtain and interpret several lines of subject-specific evidence to formulate and test hypotheses	All modules, particularly Life Sciences Research Projects and Applied Life Sciences Placements.	Essays, project reports, dissertations, literature reviews
15. make critical interpretations, evaluations and judgements of data and text	Research and Analytical Skills, Experimental Project, and level 6 taught modules	Essays, data analysis exercises. project reports, dissertations, literature reviews

16. analyse, synthesise and summarise information critically, including published research or reports	Research and Analytical Skills, Life Sciences Experimental Projects, Life Sciences Dissertation and level 6 taught modules	Essays, data analysis exercises, project reports, dissertations, literature reviews
17. apply biological understanding to familiar and unfamiliar problems, and emphasise the interdisciplinary nature of science and the validity of different points of view	All modules, particularly level 6 modules	Essays, project reports, dissertations, literature reviews
18. take responsibility for their own learning and reflect upon that learning	Life Sciences Dissertation and Life Sciences Experimental Projects	Laboratory performance, Personal Development Planning

<b>Key or Transferable Skills (graduate attributes)</b>		
<b>Learning Outcome</b>	<b>Module in which this is delivered</b>	<b>Principal forms of assessment (of the Level Outcome) used</b>
<i>Successful students will have the opportunity to develop:</i>		
E1. develop an adaptable, flexible, sustainable and effective approach to study and work, including time management, creativity and intellectual integrity	All modules, particularly the Life Sciences Research Projects and Applied Life Sciences Placements.	Essays, dissertations, experimental projects. laboratory performance
E2. acquire, analyse, synthesise, summarise and present information and ideas from a wide range of sources: textual, numerical, verbal, graphical	All modules.	Essays, dissertations, literature reviews
E3. prepare, process, interpret and present data using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	All modules with practical sessions, particularly Life at the Extremes, Research and Analytical Skills, Life Sciences Research Projects and Applied Life Sciences Placements.	Project reports, data analysis exercises, laboratory reports
E4. use the internet and other electronic sources critically as a means of communication and a source of information	Many modules, particularly Research and Analytical Skills and Life Sciences Research Projects and Applied Life Sciences Placements.	Presentations, data analysis exercises, project reports
E5. cite and reference work in an appropriate manner, avoiding issues with plagiarism	All modules	All assessments
E6. communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	All modules, particularly Research and Analytical Skills and Life Sciences Research Projects and Applied Life Sciences Placements.	Essays, oral presentations, reports, dissertations, project reports
E7. develop skills necessary for self-managed and lifelong learning,	All modules	Essays, dissertations, project reports, literature reviews

including working independently, organisational, enterprise and knowledge transfer skills		
E8. work with others to achieve an objective in a respectful manner that is accepting of the viewpoints and opinions of others and evaluates the roles and development of team members	All modules, particularly Life at the Extremes	Laboratory performance
E9. motivate themselves and sustain that motivation over an extended period of time	All modules, particularly Life Sciences Research Projects and Applied Life Sciences Placements.	Laboratory performance, experimental project
E10. identify and work towards targets for personal, academic and career development	All modules	All assessments

## 9. Final and intermediate awards

Credits required for each level of academic award are as follows:

<b>Honours Degree</b>	360 credits	<p>You will require at least 120 credits at levels 4, 5 and 6</p> <p>The number of Biology credits a student requires depends on whether Biology is taken as a Dual, Major or Minor subject.</p> <p><b>Dual Honours:</b> You will require at least 120 credits in both Biology and your other principal study (out of 360 credits overall), with at least 30 credits in year 1 (level 4) and 45 credits in years 2 and 3 (levels 5 and 6) in each of your two Principal subjects.</p> <p><b>Major Route (Accredited by the Royal Society of Biology)*:</b> You will require at least 225 credits in Biology and at least 90 credits in their other Minor subject over the course of the degree. Students taking Biology as a Major subject must obtain at least 30 credits in Biology at each of level of study.</p> <p><b>Minor Route:</b> You will require at least 90 credits in Biology and at least 225 credits in your other Major subject over the course of the degree. Students taking Biology as a Minor subject must obtain at least 30 credits in Biology in Year 1 (level 4) and 45 credits in Biology in Year 2 (level 5).</p>
<b>Diploma in Higher Education</b>	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
<b>Certificate in Higher Education</b>	120 credits	You will require at least 120 credits at level 4 or higher

**\*NB: Students who do not achieve a pass mark in the 30 credit Independent Study Project or Applied Life Sciences Placement may be eligible for a BSc (Hons) Studies in Biology. This award is not accredited by the Royal Society of Biology**

**Biology with International Year:** in addition to the above students must pass a module covering the international year in order to graduate with a named degree in Biology with International Year. Students who do not complete, or fail the international year, will be transferred to the three-year Biology programme.

**Biology with Work Placement Year:** in addition to the above students must pass a non-credit bearing module covering the work placement year in order to graduate with a named degree in Biology with Work Placement year. Students who do not complete, or fail the placement year, will be transferred to the three-year Biology programme.

## 10. How is the Programme assessed?

The wide variety of assessment methods used within Biology at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance. The following list is representative of the variety of assessment methods used within Biology:

- **Unseen and seen examinations** in different formats test students' knowledge and understanding of biology. Examinations may consist of essay, short answer and/or multiple choice questions
- **Essays**, including those based on case study material, also test the quality and application of subject knowledge. In addition they allow students to demonstrate their ability to carry out basic bibliographic research and to communicate their ideas effectively in writing in an appropriate scholarly style using the Harvard system of referencing
- **Class tests** taken either conventionally or online via the Keele Learning Environment (KLE) assess students' subject knowledge and their ability to apply it in a more structured and focused way
- **Peer assessment**, in which students assess the work of other students, under staff guidance, helps students learn from the assessment process
- **Dissertations and Literature Reviews** are critical reviews of other scholars' work and test students' ability to identify and summarise the key points of a text and to evaluate the quality of arguments and the evidence used to support them. In the case of work based on empirical research, reviews also assess students' knowledge of research methodologies and their ability to make critical judgements about the appropriateness of different strategies for collecting and analysing data
- **Experimental projects** test students' knowledge of research methodologies and their ability to carry them out. They also enable students to demonstrate their ability to formulate research questions, design experiments, carry them out and analyse the results
- **Laboratory** reports are formal summaries of work carried out in the laboratory, presenting analysed data and conclusions. They test a range of practical laboratory skills and the ability to collect analyse and present data
- **Oral and poster presentations and reports** assess students' subject knowledge and understanding. They also test their ability to work effectively as members of a team, to communicate what they know orally and visually, and to reflect on these processes as part of their own personal development

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

## 11. Contact Time and Expected Workload

This contact time measure is intended to provide you with an indication of the type of activity you are likely to undertake during this programme. The data is compiled based on module choices and learning patterns of students on similar programmes in previous years. Every effort is made to ensure this data is a realistic representation of what you are likely to experience, but changes to programmes, teaching methods and assessment methods mean this data is representative and not specific.

Undergraduate courses at Keele contain an element of module choice; therefore, individual students will experience a different mix of contact time and assessment types dependent upon their own individual choice of modules. The figures below are an example of activities that a student may expect on your chosen course by year/stage of study. Contact time includes scheduled activities such as: lecture, seminar, tutorial, project supervision, demonstration, practical classes and labs, supervised time in labs/workshop, fieldwork and external visits. The figures are based on 1,200 hours of student effort each year for full-time students.

Activity	Year 1 (Level 4)	Year 2 (Level 5)	Year 3 (Level 6)
Scheduled learning and teaching activities	34%	28%	17%
Guided independent Study	66%	72%	83%
Placements	0%	0%	0%

## 12. Accreditation

Major Route Biology and Combined Honours Biology/Biochemistry are accredited by the Royal Society of Biology (RSB).

## 13. Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at: <http://www.keele.ac.uk/student-agreement/>

A student who has completed a semester abroad will not normally be eligible to transfer onto the International Year option.

## 14. What are the typical admission requirements for the programme?

Subject	A-level	Subjects not included	International Baccalaureate	BTEC	Access to Higher Education Diploma	GCSE requirements
Biology (Dual Honours)	ABC / BBB A level Applied Science, Biology, Chemistry, Environmental Science, Geography, Geology, Human Biology, Maths, Psychology, Sports Science or Statistics.	General Studies and Critical Thinking	32 points to include Higher Level Biology, Chemistry, Maths or Physics at 6 or above.	DDM You must have taken sufficient Science units, please contact us for advice	Obtain Access to HE Diploma with 30 L3 credits at Distinction. You must also have taken sufficient Science credits, please contact us for advice.	Maths @ C (or 4) English Lang @ C (or 4)

Applicants who are not currently undertaking any formal study or who have been out of formal education for more than 3 years and are not qualified to A-level or BTEC standard may be offered entry to the University's Foundation Year Programme.

Applicants for whom English is not a first language must provide evidence of a recognised qualification in English language. The minimum score for entry to the Programme is Academic IELTS 6.0 or equivalent.

Please note: All non-native English speaking students are required to undertake a diagnostic English language assessment on arrival at Keele, to determine whether English language support may help them succeed with their studies. An English language module may be compulsory for some students during their first year at Keele.

Accreditation of Prior Learning (APL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here:

<http://www.keele.ac.uk/ga/accreditationofpriorlearning/>

## **15. How are students supported on the programme?**

Support for student learning on the Programme is provided in the following ways:

- Module tutors are responsible for providing support for learning on the modules. They also give individual feedback on in-course assessments and more general feedback on examinations.
- Tutors and demonstrators provide help and advice to students in laboratory sessions and during fieldwork.
- Every student is allocated to a personal tutor who is responsible for reviewing and advising on students' academic progress in Biology and on their other Principal Programme.
- Personal tutors also act as a first point of contact for students on non-academic issues that may affect their learning and can refer students on to a range of specialist health, welfare and financial services co-ordinated by the University's Centre for Learning and Student Support.

All members of teaching staff on the Biology Principal Programme are available to see students during office hours, if available, and by appointment.

## **16. Learning Resources**

Biology is taught in modern teaching rooms across the University, almost all of which are equipped with computers, internet access and electronic whiteboards or projection equipment. Rooms may be arranged either in traditional lecture format or more informally to allow students to work together in small groups.

Practical sessions are held in dedicated teaching laboratories within the School of Life Sciences, which have places for a total of 210 students.

The learning resources available to students on the Programme include:

- The extensive collection of books and journals relevant to undergraduate study held in the University Library. Much of this material is also accessible online to Keele students from anywhere in the world with a University username and password.
- A smaller collection of biological publications and materials held in the Undergraduate Resource Room in the School of Life Sciences. The Resource Room is open at regular times during teaching periods and the resources are specifically related to the needs of students on Principal Programmes in the School of Life Sciences.
- The Keele Learning Environment (KLE) which provides easy access to a wide range of learning resources including lecture notes, electronic materials available in a repository maintained by the University Library and other resources – video, audio and text-based – accessible from external providers via the internet.

## **17. Other learning opportunities**

### **Study abroad (semester)**

Students on the Biology programme have the potential opportunity to spend a semester abroad in their second year studying at one of Keele's international partner universities.

Exactly which countries are available depends on the student's choice of degree subjects. An indicative list of countries is on the website (<http://www.keele.ac.uk/studyabroad/partneruniversities/>); however this does not guarantee the availability of study in a specific country as this is subject to the University's application process for studying abroad.

No additional tuition fees are payable for a single semester studying abroad but students do have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad to be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination

Whilst students are studying abroad any Student Finance eligibility will continue, where applicable students may be eligible for specific travel or disability grants. Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible for income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

### **Study Abroad (International Year)**

A summary of the International Year, which is a potential option for students after completion of year 2 (Level 5), is provided at Annex A.

### **Applied Life Sciences Placement**

Students registered for Dual Honours or Major Route in Biology may undertake an industrial placement between years 2 and 3. This forms part of the Applied Life Sciences Placement module at Level 6.

Students wishing to carry out an industrial placement in the UK will be responsible for organising their own placement, with the support of the module tutors. This allows students to choose when and where to carry out their industrial placement, taking into consideration the potential living and travel expenses incurred and the effect on other opportunities available to earn money. Students are encouraged to consider the potential costs incurred in carrying out the industrial placements at the time of setting these up. Some placements attract a stipend or salary, which should be discussed with the potential employer before accepting the placement. Further guidance and support on these considerations is available from the module tutors.

Some Industrial placements are available at our partner research institutes throughout continental Europe. These placements attract a stipend from the European Union under the ERASMUS, but you should consider whether the amount offered will cover the costs of accommodation, travel and subsistence before accepting the placement. The ERASMUS tutor in the School of Life Sciences will give any guidance and support required.

### **Other opportunities**

Other learning opportunities for Biology students vary from year to year, but include a week-long coastal ecology field course in North Wales. Between their second and third year, students also have the opportunity to spend time in Malaysia or to join an Operation Wallacea expedition, carrying out conservation-based research in various parts of the tropics.

During their time at Keele, students also have the opportunity to hear from, and talk to, a range of guest speakers and presenters including researchers from around the world. Some of these activities are timetabled as part of taught modules, others are organised separately, but all are widely advertised and undergraduate students are always welcome to attend.

## **18. Additional costs**

### **Biology Programme Costs**

The compulsory residential field course is subsidised by the School of Life Sciences and you pay no fees to attend. You are required to cover your own transport costs to and from Bangor University and maintenance costs during the field course (for example food, appropriate clothing, etc.).

Learning opportunities as outlined above may be available and may incur additional costs.

These costs have been forecast by the University as accurately as possible but may be subject to change as a result of factors outside of our control (for example, increase in costs for external services). Forecast costs are reviewed on an annual basis to ensure they remain representative. Where additional costs are in direct control of the University we will ensure increases do not exceed 5%.

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation.

We do not anticipate any further additional costs for this undergraduate programme, except those associated with additional elements such as Malaysia, Study Abroad or International Year placements.

### **19. Quality management and enhancement**

The quality and standards of learning in Biology are subject to a continuous process of monitoring, review and enhancement.

- The Learning and Teaching Committee of the School of Life Sciences is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the Biology Programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year and as part of the University's Curriculum Annual Review and Development (CARD) process.
- The programmes are run in accordance with the University's Quality Assurance procedures and are subject to periodic reviews under the Internal Quality Audit (IQA) process.

Student evaluation of, and feedback on, the quality of learning on every Biology module takes place every year using a variety of different methods:

- The results of student evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of the Curriculum Annual Review and Development (CARD) process.
- Findings related to the Biology Programmes from the annual National Student Survey (NSS), and from regular surveys of the student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students in all three years of the Biology Programme is considered and acted on at regular meetings of the Programmes Staff/Student Liaison Committee.

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a student's degree
- Reviewing and giving advice on the structure and content of the programme and assessment procedures

Information about current external examiner(s) can be found here:

<http://www.keele.ac.uk/ga/externalexaminers/currentexternalexaminers/>

### **20. The principles of programme design**

The Biology Programmes described in this document have been drawn up with reference to, and in accordance with the guidance set out in, the following documents:

- a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education: <http://www.qaa.ac.uk/quality-code>
- b. QAA Subject Benchmark Statement: Biosciences (2015) [http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-biosciences-15.pdf?sfvrsn=4eef781\\_24](http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-biosciences-15.pdf?sfvrsn=4eef781_24)
- c. Keele University Regulations and Guidance for Students and Staff: <http://www.keele.ac.uk/regulations>

## 21. Document Version History

Version history	Date	Notes
Date first created	October 2016	
Revision history	V2.0: April 2017	Changes to elective module offer in Year 2 to make the options more relevant to the programme [minor – no reissue]
	V3.0: August 2017	Revisions due to RSB accreditation requirements. Includes: addition of alternative degree titles for students who a) completed the work placement and b) compensated the ISP modules at Level 6; addition of DH Biology and Biochemistry as an accredited pathway; minor changes to the experimental project module at Level 6 (now with research skills assessment). [major – reissued]
	V4.0: April 2019	- Level 5: 'Life at the Extremes' added as a compulsory module only for students who do study abroad in semester 1 of Level 5; - 'Applied Regenerative Medicine' and ' Cancer Biology' replace both 'Applied Fish Biology' and 'Developmental Biology' as optional modules at Level 6
Date approved	16/10/2017	

## Annex A for Dual Honours Programmes

Please note: in order to be eligible to take the International Year option your other subject must also offer this option. Please refer to the information published in the course document for your other subject.

### International Year Programme

Students registered for Dual Honours **Biology** may either be admitted for or apply to transfer during their period of study at Level 5 to the Dual Honours programme in both their principal subjects, providing that they meet the progression criteria outlined in this document. Students accepted onto the International Year programme will have an extra year of study at an international partner institution after they have completed Year 2 (Level 5) at Keele.

Students who successfully complete both the second year (Level 5) and the International Year will be permitted to progress to Level 6. Students who fail to satisfy the examiners in respect of the International Year will normally revert to the Dual Honours programme without the International Year and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for Dual Honours Biology with International Year'.

### International Year Programme Aims

In addition to the programme aims specified in the main body of this document, the international year programme of study aims to provide students with:

1. Personal development as a student and a researcher with an appreciation of the international dimension of their subject
2. Experience of a different culture, academically, professionally and socially

### Entry Requirements for the International Year

Students may apply to the 4-year programme during Level 5. Admission to the International Year is subject to successful application, interview and references from appropriate staff.

The criteria to be applied are:

- Academic Performance (an average of 60% across all modules at Level 5 is normally required)
- General Aptitude (to be demonstrated by application for study abroad, interview during the 2<sup>nd</sup> semester of year 2 (Level 5), and by recommendation of the student's personal tutor, 1<sup>st</sup> and 2<sup>nd</sup> year tutors and programme director)

### Student Support

Students will be supported whilst on the International Year via the following methods:

- Phone or Skype conversations with Study Abroad tutors, in line with recommended Personal Tutoring meeting points.
- Support from the University's Global Education Team

### Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete a Keele undergraduate programme with International Year will be able to:

- a. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments

- b. Discuss the benefits and challenges of global citizenship and internationalisation
- c. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.

In addition, students who complete 'Dual Honours Biology with International Year' will be able to:

- i) Use independent research skills to identify relevant information resources on a range of subjects related, or complementary, to Biology.
- ii) Demonstrate the use of critical thinking skills, augmented by creativity and curiosity, in discussing the application of their International Year studies to Biology.

Please note that students on Dual Honours programmes with International Year must meet the subject-specific learning outcomes for BOTH their principal subjects.

These learning outcomes will all be assessed by the submission of a satisfactory individual learning agreement, the successful completion of assessments at the partner institution and the submission of the reflective portfolio element of the international year module.

### **Course Regulations**

Students registered for the Dual Honours Biology with International Year' are subject to the course specific regulations (if any) and the University regulations. In addition, during the International Year, the following regulations will apply:

Students undertaking the International Year must complete 120 credits, which must comprise *at least 40%* in the student's discipline areas.

This may impact on your choice of modules to study, for example you will have to choose certain modules to ensure you have the discipline specific credits required.

Students are barred from studying any Biology module with significant overlap to Level 6 modules to be studied on their return. Significant overlap with Level 5 modules previously studied should also be avoided.

### **Additional costs for the International Year**

Tuition fees for students on the International Year will be charged at 15% of the annual tuition fees for that year of study, as set out in Section 1. The International Year can be included in your Student Finance allocation, to find out more about your personal eligibility see: [www.gov.uk](http://www.gov.uk)

Students will have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible income dependent bursaries at Keele.

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