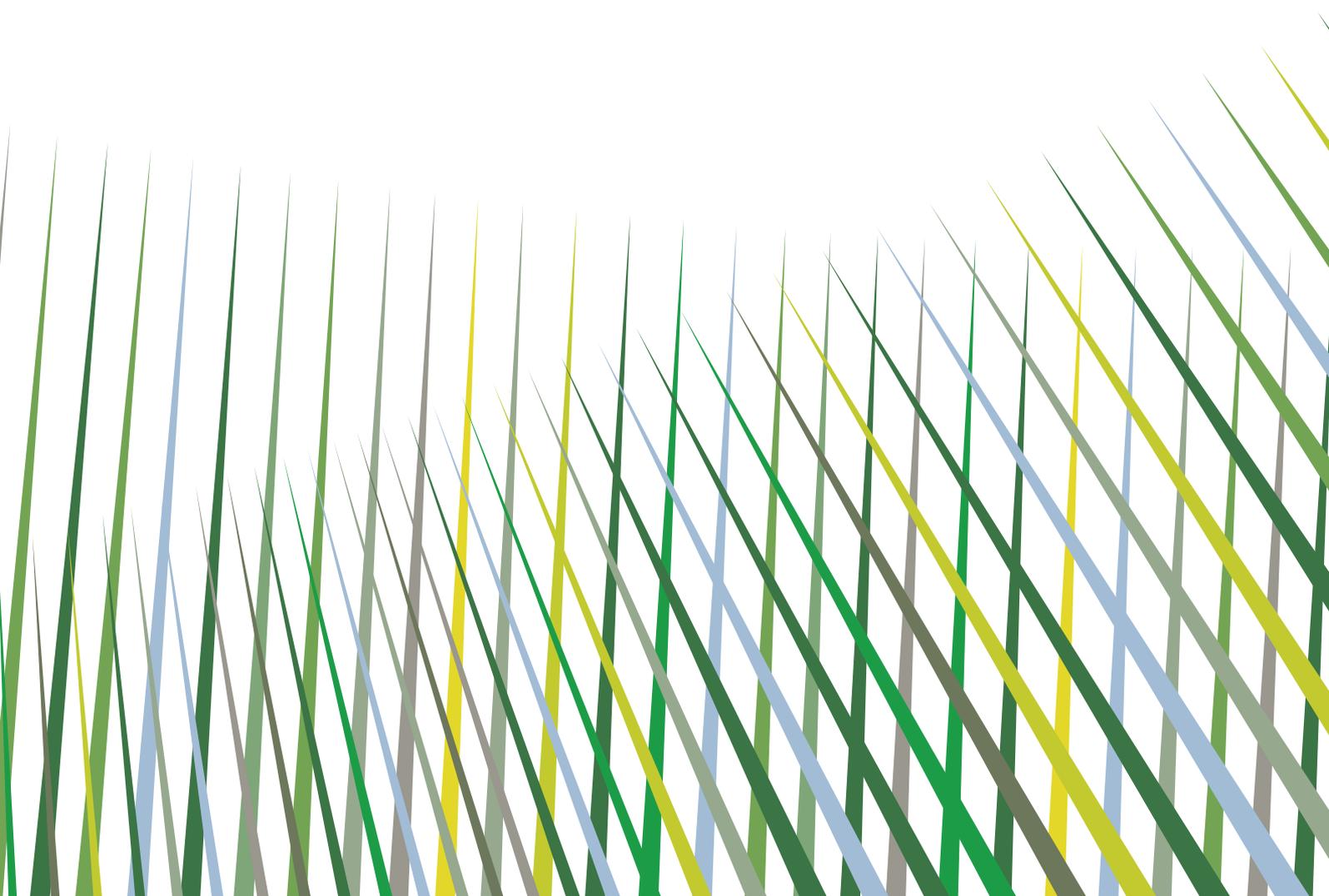


BIOSCIENCES

UNDERGRADUATE STUDY 2014 ENTRY



CORNWALL AND EXETER CAMPUSES





Key information

| CORNWALL CAMPUS | UCAS CODE | TYPICAL OFFER | STREATHAM CAMPUS, EXETER | UCAS CODE | TYPICAL OFFER |
|--|-----------|-----------------------------|---|-----------|-----------------------------|
| BSc Single Honours Animal Behaviour | D390 | AAB-ABB; IB: 34-32 C | BSc Single Honours Biological Sciences Biological Sciences (Animal Biology) | C100 | AAB-ABB; IB: 34-32 E |
| Animal Behaviour with Study Abroad | D392 | AAA-AAB; IB: 36-34 C | Biological Sciences (Microbiology and Infectious Disease) | | |
| Conservation Biology and Ecology | C190 | AAB-ABB; IB: 34-32 C | Biological Sciences (Molecular and Cellular Biology) | | |
| Conservation Biology and Ecology with Study Abroad | C150 | AAA-AAB; IB: 36-34 C | Biological Sciences with Study Abroad <i>Named specialisms as indicated above are also available with study abroad</i> | C000 | AAA-AAB; IB: 36-34 E |
| Environmental Science | F750 | AAB-ABB; IB: 34-32 C | Biological Sciences with Professional Placement <i>Named specialisms as indicated above are also available with professional placement</i> | C101 | AAA-AAB; IB: 36-34 E |
| Evolutionary Biology | C182 | AAB-ABB; IB: 34-32 C | Biochemistry | C724 | AAB-ABB; IB: 34-32 E |
| Evolutionary Biology with Study Abroad | C183 | AAA-AAB; IB: 36-34 C | Biochemistry with Study Abroad | C732 | AAA-AAB; IB: 36-34 E |
| Zoology | C300 | AAB-ABB; IB: 34-32 C | Biochemistry with Industrial Experience | C737 | AAA-AAB; IB: 36-34 E |
| Zoology with Study Abroad | C301 | AAA-AAB; IB: 36-34 C | Biological and Medicinal Chemistry | CF71 | AAB-ABB; IB: 34-32 E |
| MSci Single Honours Animal Behaviour | D393 | AAA-AAB; IB: 36-34 C | Biological and Medicinal Chemistry with Study Abroad | CF7C | AAA-AAB; IB: 36-34 E |
| Conservation Biology and Ecology | C151 | AAA-AAB; IB: 36-34 C | Biological and Medicinal Chemistry with Industrial Experience | FC17 | AAA-AAB; IB: 36-34 E |
| Environmental Science | F751 | AAB-ABB; IB: 34-32 C | Human Biosciences | C900 | AAB-ABB; IB: 34-32 E |
| Evolutionary Biology | C184 | AAA-AAB; IB: 36-34 C | | | |
| Zoology | C302 | AAA-AAB; IB: 36-34 C | | | |

For further details on all our entry requirements, please see our Biosciences web pages at www.exeter.ac.uk/undergraduate/degrees/biosciences

C **CORNWALL CAMPUS, NEAR FALMOUTH**
 Website: www.exeter.ac.uk/biosciences
 Email: cornwall@exeter.ac.uk
 Phone: +44 (0)1326 371801

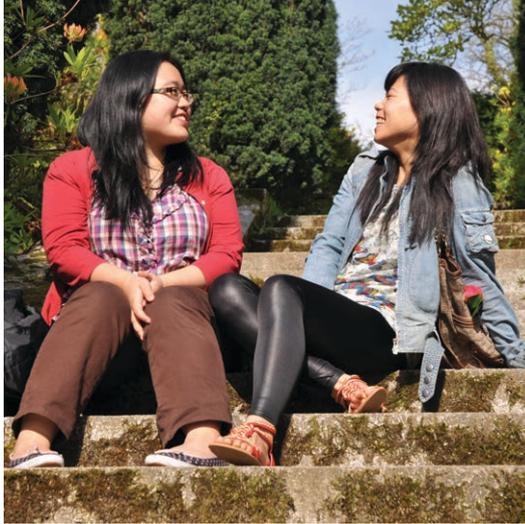
E **STREATHAM CAMPUS, EXETER**
 Website: www.exeter.ac.uk/biosciences
 Email: cles-externalrelations@exeter.ac.uk
 Phone: +44 (0)1392 725818

You may also be interested in:

BSc/MSci Natural Sciences. Please see www.exeter.ac.uk/naturalsciences

BSc Medical Sciences. Please see www.exeter.ac.uk/medicine/medicallsciences

BSc Human Sciences. Please see www.exeter.ac.uk/biosciences/undergraduate/degrees/humansciences



Why study Biosciences at the University of Exeter?

Biosciences at the University of Exeter is a rapidly expanding centre for the teaching and research of biological sciences. You'll be taught by world-leading experts in cutting-edge subjects, ranging from evolutionary biology, conservation and ecology, through whole organism biology and microbiology, to molecular and cellular biology, computational biology and biological chemistry.

We have attracted internationally renowned professors to join our staff and we also host a number of research fellows who received independent funding from the Royal Society, BBSRC, NERC, Leverhulme Trust, United States NSF, and EU Marie Curie Programmes. Many of our programmes are recognised by The Society of Biology.

We pride ourselves on providing the highest standard of care and support to our students and use the very latest research information, techniques and procedures in our teaching. We offer a wide range of modules, built around a core curriculum that provides the skills needed by the contemporary biologist, biochemist, ecologist, conservationist or medicinal chemist. Our teaching introduces new concepts in systems biology and describes how fundamental research is both commercialised in the biotechnology industry and applied practically in the fields of ecology and conservation.

We provide state-of-the-art facilities for all our students in Cornwall and Exeter. These include next-generation DNA sequencing and proteomics facilities and an enhanced bioimaging suite in Exeter, and the University's £30 million Environment and Sustainability Institute on the Cornwall Campus that is leading the way in innovative and interdisciplinary environmental research

5th in the UK for Biosciences in *The Guardian University Guide 2013*

7th for Overall Satisfaction in the National Student Survey (2012)[▲]

90 per cent of Biosciences research classified as being of international quality with world leading research undertaken in all of our research groups[◆]

Broad-based and specialist degrees available

State-of-the-art learning facilities

Learn with internationally recognised research leaders and carry out challenging independent research

All final year modules are based on the current research of our academics

Dedicated career management

Undertake field study overseas or in the UK

Opportunities to study abroad

into solutions to problems of environmental change.

Above all, we are friendly and supportive and undergraduate teaching is central to all of our activities. We work hard to develop and improve the standard of our degree programmes and provide the best possible training to our students.

[▲]96% of Biology students agreed they were satisfied
[◆]Research Assessment Exercise 2008



Biosciences in Cornwall

As a student of Biosciences at our Cornwall Campus, you'll be taught by some of the world's foremost biologists working in evolution, behaviour, ecology and conservation. All of our staff are based in our Centre for Ecology and Conservation and are active researchers who specialise in a range of fields and topics, including conservation biology, behavioural, population and community ecology, zoology, and evolutionary biology and genetics. You will benefit from expert teaching and world-class research designed to address the very latest factors influencing biodiversity and complexity in the natural world.

Cornwall is an exceptional place in which to study Biosciences. The county is a perfect living laboratory that offers a diverse range of marine and terrestrial habitats and a wealth of natural resources. You'll be welcomed into an interactive, dynamic and intimate environment in which to study. The campus features state-of-the-art equipment for teaching and research in Biosciences, including the recently extended and refurbished teaching laboratory, significant investment in iPad technology for teaching in the lab, classroom and field, as well as the

University's Environment and Sustainability Institute (ESI), which leads cutting-edge research into solutions to problems of environmental change.

Field work is an essential aspect of our programmes and can vary from one-day field trips in Cornwall to a two-week international field course, such as to South Africa, Borneo or the Bahamas*. We believe that the number of field-based learning opportunities at the University of Exeter far exceeds that offered at any other comparable university in the UK. To see our field course films visit www.exeter.ac.uk/biosciences/cec

As part of our research-led department, you will discuss the very latest ideas in our interactive seminars and tutorials and, in your final year, will become an active member of the research team. We have very close links with a wide range of conservation and environmental organisations in the UK and overseas with whom there may be the opportunity to collaborate for your final year research project. Many of our students also work with these organisations during their vacations and during their work placement module in the second year.

 The best part about studying Biosciences at the Cornwall Campus is the opportunities that are available. The staff know you and your strengths and interests, and help you to reach your potential. The field trips are amazing, taking advantage of the habitats we have on our doorstep as well as some more exotic ones! And again, the staff go the extra mile, making sure you get the most out of your experience.

CLAIRE YOUNG, CONSERVATION BIOLOGY AND ECOLOGY, CORNWALL CAMPUS



C Programmes in Cornwall

Short films about our programmes can be seen at www.exeter.ac.uk/biosciences/undergraduate/degreess

MSci/BSc Animal Behaviour

The Cornwall Campus hosts a large and thriving group of scientists who work at the cutting-edge of research on animal behaviour in the wild. These programmes encompass all aspects of behaviour in wild, domestic and captive animals. Animal behaviour research aims to identify natural behaviour patterns, understand how behaviour varies among individuals, species and species groups, and explore how current and past environments and ecology influence not only behaviour, but also the underlying gene-environment interactions that shape it. The programmes highlight the value of studying animals in their natural habitats, utilising the expertise of staff members who run long-term studies of iconic species in the wild. This approach is underpinned by field courses in the second and third years. An interdisciplinary approach is encouraged throughout the programmes, and you will be exposed to a wide range of theoretical and practical techniques used to study animal behaviour.

Year 1 You'll gain broad experience of zoology, ecology and evolutionary biology and will be introduced to the main concepts underlying the scientific study of animal behaviour. You'll learn about the major milestones in behaviour research and explore current topics of outstanding interest. In practical classes, you will learn how to collect data on behaviour and to analyse and interpret results in a rigorous scientific manner.

Year 2 You'll learn how behaviour is influenced by genes and the environment in which an animal develops, and how behaviour is regulated by hormones and neuronal mechanisms. In the second term you'll learn evolutionary approaches to the

study of behaviour, with a focus on how natural selection shapes the behaviour and life histories of animals in their natural environment.

Year 3 This year will build on previous insights and develop some key themes in more detail – particularly issues at the forefront of current knowledge. You'll interact closely with an expert member of the academic staff who is research-active and will carry out a detailed independent research project on animal behaviour in the wild or a laboratory. You may also take a residential field course in Spain, Africa, Borneo or the Bahamas* to gain practical experience of research in the wild.

Year 4 (MSci only) For students enrolled on the MSci programme, the fourth year provides an opportunity to work on two projects, each focused on a specialised area aligned with one of our leading research groups. It is expected that one of these projects will be carried out in partnership with an external organisation. The remainder of your time will be spent on a two-week intensive field course in which your scientific field-research, debating and presentation skills will be further developed.

MSci/BSc Conservation Biology and Ecology

These programmes offer you more direct field experience than any other Ecology degree in the UK, with destinations ranging from Cornwall to Africa*. You'll gain knowledge and skills that are essential for working conservationists and ecologists, including wildlife identification and data handling. In the first year, we take full advantage of Cornwall's rich landscapes with many one-day field trips around the South West Peninsula. In the second year, wider experience comes as a result of a variety of field courses in the UK and Europe, while in your third year there are opportunities to go

overseas. In all these locations, we teach vital identification skills and census techniques, while at the same time studying local ecology and conservation issues.

Year 1 You'll gain experience in a broad spectrum of topics in biology, ecology and conservation. Field trip modules, led by wildlife specialists, are an exciting aspect of the programme. You will survey a wide range of animals and plants, from marine mammals to heathland flowers, in their natural environments, recording how they interact with their surroundings and humans.

Year 2 You'll continue to explore conservation and ecology and develop your analytical skills. During the Easter vacation, we offer field courses in behaviour and biodiversity to either the Isles of Scilly or Cyprus; in the summer term you will choose from the Field Courses in Scotland, Scillies, Dorset, Cyprus or Cornwall*.

Year 3 During this year, the emphasis on field-based experience becomes even greater and gives you the opportunity to use the skills built up over the previous two years. You may take a residential field course in Spain, Africa, Borneo or the Bahamas* to gain practical experience of research in the wild. You'll also carry out a piece of research under the supervision of a member of Biosciences staff.

Year 4 (MSci only) For students enrolled on the MSci programme, the fourth year provides an opportunity to work on two projects, each focused on a specialised area aligned with one of our leading research groups. It is expected that one of these projects will be carried out in partnership with an external organisation. The remainder of your time will be spent on a two-week intensive field course in which your scientific field-research, debating and presentation skills will be further developed.

*Field course destinations may be subject to change.



MSci/BSc Environmental Science

These programmes are the University's flagship environmental degrees, enabling you to learn the science behind the Earth's amazing complexity and its environmental processes. The programmes are at the cutting-edge of current thinking in the environmental field. You will learn practical and theoretical insights from internationally renowned research experts in a range of environmental disciplines.

Full details of the programmes are available in a separate subject brochure and online at www.exeter.ac.uk/environmentalscience

MSci/BSc Evolutionary Biology

Evolutionary Biology is a fast-growing area of study, utilising ever more sophisticated technology to unravel the history of life on Earth. You'll have access to state-of-the-art facilities to develop a deep understanding of this rapidly developing field, which encompasses genetics, animal behaviour and psychology, and examine evolution from many perspectives – from the smallest building blocks of life to entire ecosystems.

Year 1 You'll develop both knowledge and practical skills in evolutionary ecology. This year will include lectures and laboratory work, introducing you to modern approaches to understanding evolution. You'll also develop important communication and analytical skills.

Year 2 In your second year you will continue to examine the basis for evolutionary change, including consideration of both the ecological and genetic mechanisms driving adaptive evolution. You'll further develop essential analytical and communication skills.

Year 3 In this year you will undertake a research project with a member of academic staff. Outside of the research project you will have complete freedom to choose among our final year modules, tailoring your degree to your specific interests. You may also take a residential field course in Spain, Africa, Borneo or the Bahamas* to gain practical experience of research in the wild.

Year 4 (MSci only) For students enrolled on the MSci programme, the fourth year provides an opportunity to work on two projects, each focused on a specialised area aligned with one of our leading research groups. It is expected that one of these projects will be carried out in partnership with an external organisation. The remainder of your time will be spent on a two-week intensive field course in which your scientific field-research, debating and presentation skills will be further developed.

MSci/BSc Zoology

At our Cornwall Campus we have one of the largest groups of scientists in the UK specialising in animal behaviour, ecology and conservation and these degrees build on our internationally recognised expertise in this field. They focus on an understanding of animal biology, with an emphasis on whole animal biology, ecology and behaviour, and the evolution of animal life histories. The programmes will be of interest to students seeking graduate careers in both human and veterinary sciences, as well as in animal ecology and behaviour.

Year 1 In your first year you will explore animals in the context of the environments in which they live. You'll examine zoology from molecules to ecosystems and get experience with the modern techniques used to generate knowledge about animal systems.

Year 2 You'll explore how animal development relates to the diversity of animal forms and examine animal behaviour as it relates to life history and adaptive evolution. You'll be able to go on either one of the behaviour and biodiversity field courses that run over the Easter break, or a field course during the summer.

Year 3 In this year you will have the opportunity to put your analytical and experimental skills to use through your research project with a member of academic staff. Our students work side-by-side with researchers, developing an independent research project. You'll also have the opportunity to go on one of our final year field courses to Spain, Africa, Borneo or the Bahamas*.

Year 4 (MSci only) For students enrolled on the MSci programme, the fourth year provides an opportunity to work on two projects, each focused on a specialised area aligned with one of our leading research groups. It is expected that one of these projects will be carried out in partnership with an external organisation. The remainder of your time will be spent on a two-week intensive field course in which your scientific field-research, debating and presentation skills will be further developed.

C Biosciences modules in Cornwall

KEY ▲ = Core
○ = Optional

How your degree is structured

The degrees are divided into core and optional modules, giving you the flexibility to structure your degree according to your specific interests. Individual modules are worth 5, 15, 30 or 40 credits. Full-time undergraduates need to take 120 credits in each year. In addition to the core modules, you can choose from an extensive range of options in all years. Each year you may take up to 30 credits from another discipline outside of Biosciences.

For up-to-date details of all our programmes and modules, please check www.exeter.ac.uk/biosciences

Please note that availability of all modules is subject to timetabling constraints and that not all modules are available every year.

Year 1 Modules

| Module Name | MSci/BSc Animal Behaviour | MSci/BSc Conservation Biology and Ecology | MSci/BSc Evolutionary Biology | MSci/BSc Zoology |
|---|---------------------------|---|-------------------------------|------------------|
| Field and Laboratory Techniques | ▲ | ▲ | ▲ | ▲ |
| Genetics | ▲ | ○ | ▲ | ○ |
| Introduction to Conservation and Ecology | ○ | ▲ | ○ | ▲ |
| Introduction to Evolution and Behavioural Ecology | ▲ | ▲ | ▲ | ▲ |
| Introduction to Invertebrate Zoology | ○ | ▲ | ▲ | ▲ |
| Introduction to Vertebrate Zoology | ▲ | ▲ | ▲ | ▲ |
| Key Skills in Biological Sciences | ▲ | ▲ | ▲ | ▲ |
| Physiology | ▲ | ○ | ○ | ○ |

Year 2 Modules

| Module Name | MSci/BSc Animal Behaviour | MSci/BSc Conservation Biology and Ecology | MSci/BSc Evolutionary Biology | MSci/BSc Zoology |
|--|---------------------------|---|-------------------------------|------------------|
| Analysis of Biological Data | ▲ | ▲ | ▲ | ▲ |
| Animal Ecophysiology | ▲ | ○ | ○ | ○ |
| Applied Entomology | ○ | ○ | ○ | ○ |
| Behaviour and Biodiversity Field Course | ○ | ○ | ○ | ○ |
| Behavioural Ecology | ▲ | ○ | ○ | ○ |
| Biodiversity and Conservation | ○ | ▲ | ○ | ○ |
| Critical Thinking and Scientific Reasoning | ▲ | ▲ | ▲ | ▲ |
| Development of Behaviour | ▲ | ○ | ○ | ○ |
| Evolutionary Ecology | ○ | ○ | ▲ | ○ |
| Evolutionary Conservation and Genetics | ○ | ○ | ▲ | ○ |
| Exploitation of the Sea | ○ | ○ | ○ | ○ |
| Field Course (Scillies, Dorset, Scotland, Cyprus)* | ▲ | ▲ | ▲ | ▲ |
| Humans and Disease | ○ | ○ | ○ | ○ |
| Introduction to Ecological Consultancy | ○ | ○ | ○ | ○ |
| Population and Community Ecology | ○ | ▲ | ○ | ○ |
| The Biology of Mammals | ○ | ○ | ○ | ▲ |
| Wildlife Disease | ○ | ○ | ○ | ○ |
| Workplace Learning | ○ | ○ | ○ | ○ |

*Field course destinations may be subject to change.



KEY ▲ = Core
○ = Optional

Year 3 Modules

Please note third year optional modules are indicative only and may be subject to change. These modules will be taken in year 4 of the Study Abroad programmes.

| Module Name | MSci/BSc Animal Behaviour | MSci/BSc Conservation Biology and Ecology | MSci/BSc Evolutionary Biology | MSci/BSc Zoology |
|--|---------------------------|---|-------------------------------|------------------|
| Africa Field Course | ○ | ○ | ○ | ○ |
| Animal Life History, Diversity and Conservation | ○ | ○ | ○ | ○ |
| Bahamas Field Course | ○ | ○ | ○ | ○ |
| Borneo Field Course | ○ | ○ | ○ | ○ |
| Climate Change, Evolution and Public Perception of Science | ○ | ○ | ○ | ○ |
| Coevolutionary Interactions | ○ | ○ | ○ | ○ |
| Dissertation | ○ | ○ | ○ | ○ |
| Human Behavioural Ecology | ○ | ○ | ○ | ○ |
| Living in Groups | ○ | ○ | ○ | ○ |
| Marine Vertebrate Conservation | ○ | ○ | ○ | ○ |
| Mating Systems Biology | ○ | ○ | ○ | ○ |
| Nature via Nurture | ○ | ○ | ○ | ○ |
| Preparing to Graduate | ▲ | ▲ | ▲ | ▲ |
| Reproductive Biology | ○ | ○ | ○ | ○ |
| Research Project | ▲ | ▲ | ▲ | ▲ |
| Spain Field Course | ▲ | ▲ | ▲ | ▲ |
| The Behavioural Ecology of Information Use | ○ | ○ | ○ | ○ |
| Trends in Ecology and Evolution | ○ | ○ | ○ | ○ |



All the staff are very supportive and helpful, and you're treated like an individual, not just 'one of the herd'. The field trips are fantastic and offer a great way to explore Cornwall and areas further afield.



SAMANTHA ANDREWS, CONSERVATION BIOLOGY AND ECOLOGY WITH STUDY ABROAD, CORNWALL CAMPUS

Modules in Cornwall

Please note that availability of all modules is subject to timetabling constraints and that not all modules are available every year. For a full list and details of the individual modules, please check the undergraduate section of our website at www.exeter.ac.uk/biosciences

Year 1

| | |
|--|---|
| Field and Laboratory Techniques | There is an extraordinary wealth of wildlife everywhere you look. This module introduces you to the diverse ways that we as scientists can gather information from the world around us. From collection and identification of specimens to laboratory analysis. The combination of field and laboratory techniques covered in this module will leave you with a wealth of skills and methodologies for exploring fully the world around them. |
| Genetics | You'll gain a basic understanding of how information is stored and expressed in cells, the differential role of genes and the environment on expression of a phenotype, and of the behaviour of genes in populations. |
| Introduction to Conservation and Ecology | This module introduces the fundamentals of each topic and will provide you with core knowledge of ecology and conservation. |
| Introduction to Evolution and Behavioural Ecology | This module provides grounding in the basic principles and significance of Darwinian evolution in an ecological and behavioural context. It introduces the mechanisms of evolution and explores how this process links to behaviour and biodiversity. |
| Introduction to Invertebrate Zoology | This module develops your core knowledge of biodiversity and macroevolutionary patterns, forming a grounding for future studies. You'll attend lectures covering a wide range of topics from the origin of life to the most complex invertebrates. In practical classes, you will learn about invertebrate diversity, concentrating on function and adaptation to environments and ecosystems. |
| Introduction to Vertebrate Zoology | This module builds on the first-term module in <i>Invertebrate Zoology</i> , exploring similar themes in vertebrates. You'll attend lectures covering a wide range of topics from the first chordates through to the evolution of humans. In practical classes, you will learn about vertebrate diversity, concentrating on function and adaptation to environments and ecosystems. |
| Key Skills in Biological Sciences | This module develops a variety of practical and transferable skills in areas such as teamwork, scientific report writing, oral presentations, study skills, basic laboratory skills, experimental design, data handling, display and interpretation, and basic statistical analysis. |
| Physiology | We explore the essential features of anatomy and how this relates to physiological function throughout a range of animals and some plants. We place an emphasis on how structure, function and physiology link to lifestyle, habitat and evolutionary history. |

Year 2

| | |
|---|--|
| Analysis of Biological Data | This module provides basic training in the collection and analysis of ecological datasets, recognising that statistics is a tool for understanding biological data. You'll gain experience with the modern scientific method as applied in ecology and evolution, including hypothesis formulation, experimental design and modern techniques for collecting and analysing data. |
| Animal Ecophysiology | This module explores how an understanding of physiological mechanisms and function inform the study of animal ecology at the level of individuals, and the implications for populations, communities and ecosystems. You'll cover animal nutrition, energetics, life history trade-offs, endocrine systems, reproductive systems, animal signalling, respiration, osmoregulation and senescence. |
| Applied Entomology | You'll gain an understanding of the systematics and biology of a range of pest species, disease vectors and species providing ecosystem services (eg, pollinators). We will also investigate methods of pest control and monitoring rare species. |
| Behaviour and Biodiversity Field Courses | You can select between field courses visiting the Isles of Scilly or Northern Cyprus. The module aims to promote an understanding of animal behaviour, biodiversity and ecology by means of first-hand experience, observation and learning in a field environment. |
| Behavioural Ecology | This module explores how natural selection shapes the behavioural strategies of animals in the wild. The emphasis will be on discussing key concepts that can be applied to explain behaviour across very different animals in different habitats, exploring the problems faced by animals as they survive and reproduce, and the behavioural and social adaptations that have evolved in response to environmental pressures. |
| Biodiversity and Conservation | This module introduces the study of biodiversity and conservation biology and emphasises their growing importance. We provide up-to-date information on global and local conservation issues, concluding with a discussion of how conservation work can scale up, via scientific collaboration, to solutions to national and global conservation problems. |
| Critical Thinking and Scientific Reasoning | In this module you will consider not only critical thinking and scientific reasoning, but also the very basis of knowledge itself. The module explores questions such as how knowledge is created and validated, as well as exploring key skills for critical thinking and evaluating evidence applicable to all disciplines. |
| Development of Behaviour | Explore how genes, environment and physiological mechanisms interact to shape the behaviour of animals, from insects to humans. You'll focus on how behaviour develops over the lifespan of the animal, how experience affects social and cognitive development, and how an evolutionary perspective can shed light on the causes of variation in behaviour within and among species. |



Evolutionary Ecology

This module develops and expands your understanding of evolution and ecology by considering the ecological mechanisms underlying evolutionary change. It will focus on the concepts of environmental variation and the mechanisms underlying how and why the diversity of life has evolved, including concepts of speciation, co-evolution and plant-animal interactions.

Evolutionary Conservation and Genetics

This module develops and expands your understanding of the principles introduced in *Introduction to Evolution and Behaviour* by considering the genetic mechanisms underlying evolutionary change. It focuses on the concepts of genetic variation and the forces underlying the changes in allele frequency over time.

Exploitation of the Sea

This module looks at the Earth's marine ecosystems and investigates the many ways in which we have exploited coastal, open-ocean and deep-sea habitats in tropical, temperate and polar seas. You will take a detailed look at particular issues regarding exploitation of resources and their associated impacts, focusing specifically on the modern day, including renewable energy extraction, artisanal and industrial fisheries (including bycatch), hydrocarbon exploration (including oil pollution and seismic surveying), noise pollution (military and civil), (eco)tourism and climate change.

Field Course

You can select among field courses visiting Scotland, Scillies, Dorset or Cyprus. The module aims to promote understanding of the skills and techniques that ecologists use to measure and survey animals and plants by means of first-hand experience, observation and learning in a field environment.

Humans and Disease

Infectious disease continues to play a critical role in human societies worldwide. Disease spreads through populations as one of the most important ecological interactions while resistance to antibiotics is selected for and spreads through the rules of evolutionary biology. The aim of the module is to teach ecological and evolutionary principles in the light of infectious disease affecting human populations and societies.

Introduction to Ecological Consultancy

This module deals with the key issues and techniques involved in ecological consultancy; it is therefore excellent preparation for those who intend to pursue a career in ecological consultancy, or those who would like to understand more about the kind of work this entails.

Population and Community Ecology

This module develops your expertise in population and community ecology and includes a field trip to Dartmoor. You'll develop a broad perspective on important issues in both fundamental and applied ecology, including conservation, pest management and sustainable exploitation of resources.

The Biology of Mammals

In this module, we first build a foundation understanding of mammalian evolution and classification. We then move rapidly to draw inspiration from case studies and controversies in mammalian biology and use these to explore the evolution, adaptation, ecology and management of modern mammals. Wherever possible, we will use examples from the British Isles, as well as further afield. In the lab, we will explore evolution and morphology, while in the field we will develop skills in catching and handling small mammals.

Wildlife Disease

This module develops your knowledge of infectious wildlife disease, focusing on the main causes of infectious disease. You'll explore how these disease-causing agents interact with wildlife and how wildlife interacts with disease, including immunological adaptations and responses. Key examples are used to illustrate the basic microbiology and immunology and place this knowledge into a wildlife context.

Workplace Learning

This module will provide you with an opportunity to get ahead of the crowd by gaining practical experience in a real life working environment. You'll apply for a placement position with a relevant organisation, and spend 70 hours in the workplace (either full-time or part-time, depending on when the placement is conducted). This module provides a valuable opportunity for you to build confidence, develop transferable skills and enhance your CV, all of which will improve your career prospects after graduation.

Year 3

Africa Field Course

This module develops your scientific knowledge and understanding within three main areas – ecology, environmental biology and conservation – all while you are based in a developing country. This trip is where you gain first-hand experience of many of the concepts you have learned about in previous years.

Animal Life History, Diversity and Conservation

This module is designed to develop and expand your understanding of the principles introduced in earlier modules by exploring animal life history diversity and evolution in the context of conservation and wildlife biology.

Bahamas Field Course

The field course to the Bahamas will take place on the island of Eleuthera, based at the Cape Eleuthera Institute. The field course will focus on tropical marine biology, avian biology and ecosystem connectivity. You will gain experience of surveying and identification of species within coral reef, coral sand, sea grass beds, mangrove and endemic forest habitats.

| | | | |
|--|--|---|---|
| Borneo Field Course | This field course will take the form of an expedition to an area of rain forest that has received little or no biodiversity research to date. You will use a range of techniques for studying tropical biodiversity such as camera trapping, mist netting, seine netting, surveying transects. You will also observe the pressure that economic development places on this unique ecosystem. | Nature via Nurture | Understanding the chief generators of phenotypic variation lies at the heart of attempts to understand the process of evolution by natural selection. It is becoming increasingly clear that phenotypes are governed by direct and indirect 'environmental' effects on patterns of gene expression as well as the underlying genotype. Such epigenetic effects can be heritable; influencing the phenotype of offspring and grand-offspring. This module will introduce you to epigenetic processes highlighting how they influence phenotypes, and to examine the role of epigenetics in adaptation. |
| Climate Change, Evolution and Public Perception of Science | This module develops and expands the principles of ecology and evolution introduced in your second year, leading to an understanding of their implications for public policy issues and the public understanding of science. | Preparing to Graduate | This module will ensure that in your final year you're aware of the different career paths available to Biosciences graduates and will allow you to gain the skills and experience necessary to maximise your chance of securing graduate-level employment. You will be provided with an opportunity to attend career-focused seminars which will give advice on self-promotion (through CVs, application forms, covering letters and web resources) as well as advice on obtaining CV enhancing skills and experience (eg, web design, scientific communication, grant writing, postgraduate study). |
| Coevolutionary Interactions | The evolution of one species in response to another, and reciprocal adaptation of the other species to the first, plays a central role in shaping the great diversity we see in nature. The module will use a range of approaches to investigate how species interactions might: generate and maintain diversity, drive speciation, help or hinder the spread of invasive species, and affect the stability of communities. | Reproductive Biology | Sperm cells display an incredible diversity in form, which is quite remarkable when all they have to do is fertilise ova. While the module primarily focuses on animal sperm, it also uses this unusual cell as a vehicle to discuss the history of biology, plus aspects of sexual reproduction, evolution, selection, unusual genetic systems and speciation. |
| Dissertation in Conservation Biology/Evolution/Zoology/Animal Behaviour | This module aims to provide you with an opportunity to prepare a dissertation on a research topic of modern interest and relevance to Conservation Biology/Evolution/Zoology/Animal Behaviour. You'll develop your skills in reviewing the literature relevant to your chosen topic, and in writing a scientific report. You will choose your topic through discussions with the academic staff. | Research Project | The research project gives you the opportunity to undertake your own independent and original piece of research, under the supervision of a member of Biosciences staff. Research projects may be based in the field or laboratory and will deal with questions and issues at the cutting-edge of biosciences. |
| Human Behavioural Ecology | In this module we will use evolutionary theory to try and understand why humans behave the way they do. We will examine both the differences and similarities in the behaviour of human populations across the world to understand how natural selection has shaped our anatomy, mating and marriage systems, patterns of reproduction, lifespans, social systems and culture. We will build on the theoretical material covered during the lectures with practical exercises and guest lectures from experts. | Spain Field Course | The Spanish Island of Tenerife is located over 1,000 kilometres from the mainland, and is crowned by Mount Teide, the highest mountain in Spain. It has over 600 endemic species. This field course will demonstrate the adaptations of plants and animals to habitats ranging from arid scrublands through humid laurel forests, and coniferous woodlands to the surrounding ocean. You'll examine the behaviour and interactions of animals and plants in these habitats in detail; by conducting observational and experimental studies of behaviour and distribution. |
| Living in Groups | When animals live in groups we see some of the most remarkable behaviours in the animal kingdom. From the highly coordinated movements of shoaling fish, to the extreme morphological adaptations seen in some social insects, animal societies are truly spectacular. This module will explore the different social systems that exist in the animal kingdom and consider how these societies may have evolved. | The Behavioural Ecology of Information Use | This module focuses on ecology at the interface of evolutionary, physiological and behavioural aspects of the subject, concentrating on information use by organisms in their natural habitats. It will help you develop a fuller understanding of the way natural and sexual selection can and does act to mould much of what we see in the natural world. |
| Marine Vertebrate Conservation | This module looks at the science underpinning the ecology and conservation of the major marine megavertebrate groups. Typical cross-cutting topics include: status assessment; life histories; migration; direct exploitation and fisheries bycatch; climate change; and conservation policy. | Trends in Ecology and Evolution | You'll look at current research in conservation, ecology, evolution and zoology and foster skills in acquisition, synthesis and communication of information. You'll attend seminars presented by external speakers, each an expert in their field of research, and have the opportunity to discuss with them the topics covered and issues raised. |
| Mating Systems Biology | The evolution of animal mating systems and alternative mating strategies lies at the heart of studies of sexual selection. In this module we discuss how factors such as population density, operational sex ratio, and habitat quality can directly influence animal mating patterns. | | |



Biosciences in Exeter

Choosing a Biosciences degree at our Streatham Campus in Exeter will lead you into a community of scientists whose world-class research is matched by their passion for teaching. We can offer an all-encompassing knowledge in all aspects of biology, whether it be ecology, whole organism biology, microbiology, cell biology, biological chemistry or computational biology.

You'll be welcomed into a warm, friendly, vibrant and supportive scientific environment, where the enthusiasm and engagement from both staff and students produces one of the very best undergraduate experiences. From your first day, you'll interact with exceptional researchers in your academic tutorials and group lectures. Over the course of your degree, your learning will be driven towards small, focused sessions in the final year, based around the very latest research topics. You will also be able to undertake a challenging independent research project dealing with questions and issues at the cutting-edge of life science research.

You'll be located in the refurbished Geoffrey Pope Building, where our new £3.8 million teaching laboratory is equipped with state-

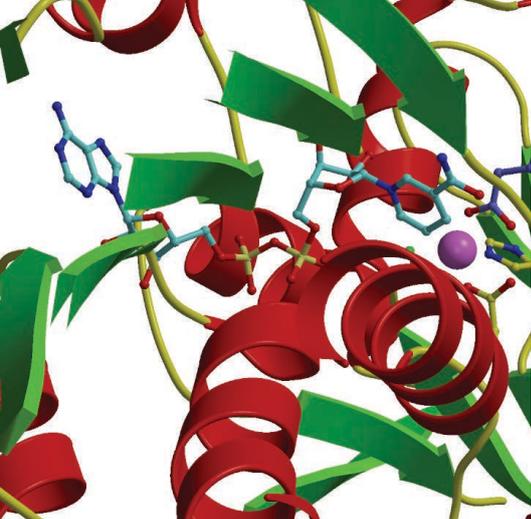
of-the-art instruments for observational, experimental and numerical aspects of biosciences including biochemical, molecular, physiological and electronic apparatus. We also have an excellent Bioinformatics Computer Centre to facilitate the rapid growth in biological computer use.

In addition, we have next-generation DNA sequencing facilities and have recently invested £5 million in new equipment and a bio-imaging facility. This includes both scanning and transmission electron microscopes, laser confocal and fluorescence microscopes, and real-time polymerase chain reaction and array scanning machines. A further £17.6 million has been spent to provide world-class research facilities across all the biosciences laboratories in the Geoffrey Pope building.

Our academics have close links with a wide range of industrial, medical and conservation organisations that you may be able to collaborate with for your final year research project. Many of our students work with these organisations during their vacations and others build their experience through one of our four year programmes with industrial experience.

 Exeter receives my fullest praise... These [programmes] set degrees in Biological Sciences at Exeter as some of the most attractive in Britain. 

**PROFESSOR JEFFREY G DUCKETT, EMERITUS PROFESSOR OF BOTANY,
DEPARTMENT OF BOTANY, NATURAL HISTORY MUSEUM EXTERNAL ASSESSOR**



Programmes in Exeter

BSc Biological Sciences

BSc Biological Sciences (Animal Biology)

BSc Biological Sciences (Microbiology and Infectious Disease)

BSc Biological Sciences (Molecular and Cellular Biology)

This is our most popular and flexible degree programme, giving you the option to design either a broad-based biology degree or a more focused degree specialising in areas of biology that interest you. For specialisms in animal biology, microbiology and infectious disease or molecular and cellular biology you can graduate with your chosen specialism named as part of the degree title, eg, BSc Biological Sciences (Microbiology and Infectious Disease). The Biological Sciences degree leads to a variety of employment and further study opportunities in a wide spectrum of bioscience-related areas and can also act as a sound foundation for non-science-related career paths.

After a first year which covers the range of biology from molecules to ecosystems, you have complete freedom of module choice. Options range from forensic science to the ecology of environmental change; from mammalian biology to medical cell biology; from the molecular basis of infection to a coral reef field course. You can mould your degree as you wish, specialising in the pathways mentioned above, or in other areas, or keeping your biological choices broad. If you want a degree with one of the named specialisms in brackets you simply need to take sufficient second and final year options in those subject areas; you will receive advice about this once you're at Exeter and you do not need to make any decisions in advance.

Year 1 You'll be introduced to modern techniques associated with biology research and their application, within a range of fields from biotechnology industries to biodiversity and conservation. Modules include topics in biochemistry, genetics, microbiology, animals, plants and ecology.

Year 2 There is only one compulsory module in the second year (*Research Skills and Bioethics*) and this forms a foundation for the work of the final year research project. Optional modules will help your understanding of key concepts in biological sciences and also offer you the opportunity to specialise within particular areas.

Year 3 In the final year, you'll take modules that will provide you with the opportunity to focus on an area of biology that particularly interests you. You'll also take either an independent research project or dissertation, centred on the cutting-edge research of leading scientists in Biosciences.

BSc Biological Sciences with Professional Placement

This four year version of the Biological Sciences degree includes a professional placement year between the second and final years. This year will be spent working in an appropriate business or industry with services in biological research, analysis or consultancy. We have established collaborations with local, national and multinational organisations.

We find that our students gain valuable experience from work placements. As well as increasing first-hand knowledge, you'll also improve your personal and transferable skills, make new contacts and enhance your employability. Our placement degrees develop experienced graduates and the placement companies often offer employment after graduation.

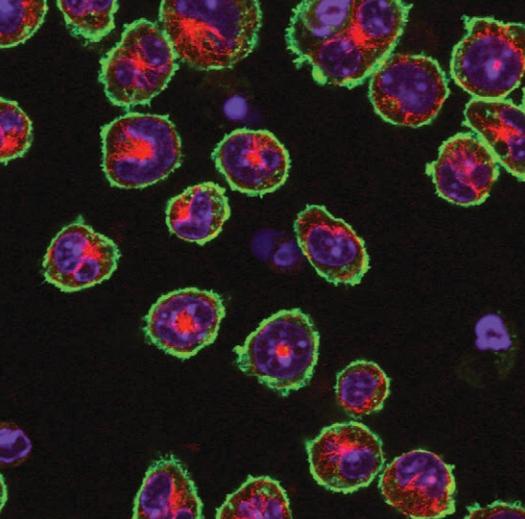
BSc Biochemistry

Our degree programme in Biochemistry focuses on understanding biological systems at a cellular, molecular and biochemical level. After a broad first year, this degree focuses on cellular biochemistry providing specialist modules aimed at understanding key topics at the frontiers of cell biology. As you progress through the second and third years, a wide choice of biochemistry module options is available, including metabolism, molecular biology of the cell, cell cycle and cancer, and horizons in biochemical research. The Biochemistry degree leads to career opportunities in biotechnological, pharmaceutical and other industries, as well as many further study options, including PhD/MSc /MRes programmes.

Year 1 The first year provides a firm foundation for your degree with modules in biochemistry, cell biology, genetics, microbiology, and organic and inorganic chemistry. This forms the core of your programme, with options available in physical chemistry and plant biology.

Year 2 In addition to core biochemistry, organic chemistry, genomics and biotechnology modules, you'll choose three optional modules in subjects ranging from biological chemistry to medical and general microbiology and evolutionary biology.

Final Year Around the core topic of *Horizons in Biochemical Research*, you can choose a research project or dissertation, plus a flexible choice of modules from a wide range within biochemistry, molecular cell biology and biological chemistry.



BSc Biochemistry with Industrial Experience

This four-year version of the Biochemistry degree includes a paid year in industry between the second and final years. In your third year you spend a salaried year working on a research project in the biotechnology or pharmaceutical sectors. We have established collaborations with local, national and multinational companies, and have successfully placed students with companies including AstraZeneca, GSK, the Environment Agency, Axiom Veterinary Laboratories and Shell.

We find that our students gain valuable experience from working in industry. As well as increasing their first-hand knowledge, they also improve personal and transferable skills, make new contacts and enhance their employability. Our industrial placement degrees develop experienced graduates and the placement companies often offer employment after graduation.

During your year in industry you are paid by the company and take two modules: *Learning from Industrial Experience* and *Industrial Placement and Report*. You will have regular contact with an academic supervisor in addition to an industrial supervisor at the company.

BSc Biological and Medicinal Chemistry

This interdisciplinary degree provides training in both biological sciences and chemistry and shows how these areas relate to aspects of medicine and drug design. Module choices in your second and final year allow further specialisation in chemistry, forensic science, cell biology, molecular biology and genomics, and biotechnology. This degree leads to many career opportunities in pharmaceutical, chemical, biotechnological and other industries as well as medically-related employment and further study; it is recognised by the Royal Society of Chemistry.

Year 1 You'll develop an understanding of the fundamentals of chemistry and biochemistry, cell structure and physiology, genetics, microbiology and molecular biology. Practical work is designed to complement the lectures.

Year 2 In addition to core chemistry and molecular biology, you will study interdisciplinary subjects such as analytical biochemistry, metabolism and chemistry of biological systems. You can also take an option in molecular biology of the gene, cell biology or forensic science.

Final Year You'll study, amongst other things, pharmacology, medicinal chemistry and drug design, and you can choose an independent research project or dissertation centred on the research work of members of staff. You'll be able to choose from projects in the areas of biological science, chemistry, biochemistry or clinical research.

BSc Biological and Medicinal Chemistry with Industrial Experience

This four-year version of the Biological and Medicinal Chemistry degree includes a paid year in industry between the second and final years where you'll work on a research project in either the chemical, pharmaceutical or biotechnology sectors. We have established collaborations with local, national and multinational companies, and have successfully placed students with companies including AstraZeneca, GSK, the Environment Agency, Axiom Veterinary Laboratories and Shell.

We find that our students gain valuable experience from working in industry; not only first-hand knowledge, but improving personal and transferable skills, making new contacts and enhancing employability. Our industrial placement degrees develop experienced graduates and the placement companies often offer employment after graduation.

During your year in industry you are paid by the company and take two modules:

Learning from Industrial Experience and *Industrial Placement and Report*. You will have regular contact with an academic supervisor in addition to an industrial supervisor at the company.

BSc Human Biosciences

Our BSc Human Biosciences is taught jointly by Biosciences and Sport and Health Sciences across both the Streatham and St Luke's campuses in Exeter and represents an innovative collaborative teaching response to a broadening demand for graduates with skills in biological and sport sciences. It allows you to study scientific aspects of health, physical activity and biotechnology and recognises the importance that exercise can play in the prevention and treatment of disease. You'll receive a thorough grounding in the study of human and molecular biology together with the various sub-disciplines of exercise and sport sciences, including biomechanics, kinesiology, human and applied physiology, molecular biology, genetics and cell biology. This unique degree can lead to a variety of biological and sport-related employment opportunities as well as in other fields. There is also the prospect of further study opportunities.

Year 1 Your first year will provide you with a foundation in exercise science and biology. Practical work is designed to complement the lectures. You'll receive training in key scientific skills as part of the *Fundamental Principles for Bioscientists* module, which includes small group academic tutorials.

Year 2 In your second year, the modules build on knowledge and skills obtained in the first year. You can now begin to tailor your degree to suit your personal interests in biology and exercise and sports sciences.

Final Year You have the opportunity to focus on areas of biology and exercise and sport sciences that particularly interest you, and you can undertake a project/dissertation centred on the research work of a member of staff. Under their academic supervision, you'll develop the skill set needed to move forward as a science graduate.

Biosciences modules in Exeter

KEY ▲ = Core
○ = Optional

How your degree is structured

The degrees are divided into core and optional modules, giving you the flexibility to structure your degree according to your specific interests. Individual modules are worth 15, 30 or 45 credits. Full-time undergraduates need to take 120 credits in each year. In addition to the core modules, you can choose from an extensive range of options. In the second and final years you may take up to 30 credits from another discipline outside of Biosciences.

For up-to-date details of all our programmes and modules, please check www.exeter.ac.uk/biosciences

For details of the Sport Science modules taught on BSc Human Biosciences please see www.exeter.ac.uk/sportscience

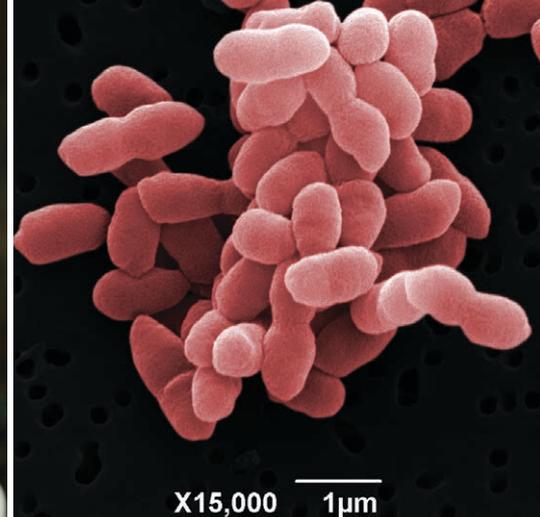
Please note that availability of all modules is subject to timetabling constraints and that not all modules are available every year.

Year 1 Modules

| Module Name | BSc Biological Sciences | BSc Biochemistry | BSc Biological and Medicinal Chemistry | BSc Human Biosciences |
|---|-------------------------|------------------|--|-----------------------|
| Animals | ▲ | | | |
| Biochemistry | ▲ | ▲ | ▲ | |
| Bioenergetics | | | | ▲ |
| Cell and Developmental Biology | ▲ | ▲ | ▲ | ▲ |
| Ecology | ▲ | | | |
| Essential Elements of Life | | ▲ | ▲ | |
| Fundamental Principles for Bioscientists | ▲ | ▲ | ▲ | ▲ |
| Genetics | ▲ | ▲ | ▲ | ▲ |
| Human Anatomy and Kinanthropometry | | | | ▲ |
| Human Physiology | | | | ▲ |
| Microbiology | ▲ | ▲ | ▲ | ▲ |
| Physical Chemistry for the Life Sciences | | ○ | ▲ | |
| Plants | ▲ | ○ | | |
| Structure and Reactivity of Organic Compounds I | | ▲ | ▲ | |

Year 2 Modules

| Module Name | BSc Biological Sciences | BSc Biochemistry | BSc Biological and Medicinal Chemistry | BSc Human Biosciences |
|---|-------------------------|------------------|--|-----------------------|
| Advanced Cell Biology | ○ | ▲ | ○ | ○ |
| Analytical Techniques in Biochemistry | ○ | ▲ | ▲ | |
| Animal Ecophysiology | ○ | | | |
| Bioinorganic Chemistry | | ○ | ▲ | |
| Biomechanics and Kinesiology | | | | ▲ |
| Coral Reef Field Course | ○ | | | |
| Developmental Biology | ○ | | | |
| Ecology and Environment | ○ | | | |
| Elements of Chemistry in Biological Systems | | ○ | ▲ | |
| Evolution and Informatics | ○ | ○ | | |
| Exercise Physiology | | | | ▲ |
| Forensic Science | ○ | ○ | ○ | ○ |
| Genomics and Introductory Bioinformatics | ○ | ▲ | ○ | ○ |
| Marine Biology | ○ | | | |
| Medical and General Microbiology | ○ | ○ | ▲ | ○ |
| Metabolism | ○ | ▲ | ▲ | |
| Molecular Biology of the Gene | ○ | ○ | ○ | ○ |
| Practical Skills in Ecology Field Course | ○ | | | |
| Problems and Projects in Animal Behaviour | ○ | | | |
| Quantitative Research Methods | | | | ▲ |
| Research Skills and Bioethics | ▲ | ▲ | ▲ | ▲ |
| Sports Nutrition | | | | ○ |
| Strength Conditioning and Athletic Training | | | | ○ |
| Structure and Reactivity of Organic Compounds 2 | ○ | ▲ | ▲ | |



KEY ▲ = Core
○ = Optional

Final Year Modules

Please note final year optional modules are indicative only and may be subject to change. These modules will be taken in year 4 of the study abroad, professional placement or industrial experience programmes.

| Module Name | BSc Biological Sciences | BSc Biochemistry | BSc Biological and Medicinal Chemistry | BSc Human Biosciences |
|---|-------------------------|------------------|--|-----------------------|
| Biomechanical Analysis of Human Movement | | | | ○ |
| Cell Cycle and Cancer | ○ | ○ | ○ | ○ |
| Cellular Basis of Immunity | ○ | ○ | ○ | ○ |
| Clinical Exercise Prescription | | | | ○ |
| Current Issues in Marine Biology | ○ | | | |
| Developmental Biology | ○ | | | ○ |
| Dissertations or Independent Research Project | ▲ | ▲ | ▲ | ▲ |
| Ecology of Environmental Change | ○ | | | |
| Ecotoxicology | ○ | ○ | | |
| Employability and Career Development | | | | ○ |
| Environmental Microbiology | ○ | | | |
| Evolution of Infectious Diseases | ○ | | | ○ |
| Factors Affecting Performance | | | | ○ |
| Frontiers in Molecular Cell Biology | ○ | ▲ | ○ | ○ |
| Horizons of Biochemical Research | ○ | ▲ | ○ | |
| Mammalian Biology | ○ | | | |
| Microbial Effectors of Disease | ○ | ○ | ○ | ○ |
| Molecular Basis of Infection | ○ | ○ | ○ | ○ |
| Organic Synthesis | | ○ | ▲ | |
| Paediatric Exercise Physiology | | | | ○ |
| Pharmacology and Medicinal Chemistry | ○ | ○ | ▲ | |
| Science Communication | ○ | ○ | ○ | ○ |
| Secondary Metabolism and Metabolites | ○ | ○ | ▲ | |
| Specialist Topics in Chemical Sciences | | ○ | ○ | |
| The Cytoskeleton in Human Disease | ○ | ○ | ○ | |

Modules in Exeter

Please note that availability of all modules is subject to timetabling constraints and that not all modules are available every year. For a full list and details of the individual modules, please check the undergraduate section of our website at www.exeter.ac.uk/biosciences

Year I

| | | | |
|---|--|--|--|
| Animals | You'll explore the essential features of vertebrates and invertebrates and how their anatomy relates to physiological function. Particular emphasis is placed on structure and how this relates to function, especially physiology, lifestyle and habitat. | Human Anatomy and Kinanthropometry | This module provides you with a fundamental understanding of the structure and function of the musculoskeletal and cardiopulmonary systems. You'll develop practical laboratory-based skills and are expected to apply knowledge to an exercise or sports context. In addition you obtain a foundation in kinanthropometry through practical application of measurement techniques and discussion of current issues. |
| Biochemistry | Biochemistry is an introductory module providing the essential biochemical knowledge for understanding all living processes. You will study protein structure, enzyme kinetics and basic metabolism; understanding how each of these processes function and shape the living cell. Practical sessions offer you vital hands-on experience, learning key biochemical techniques and how to apply them. | Human Physiology | This module introduces the fundamentals of the human physiology with an emphasis on understanding the physiological responses to exercise from a metabolic, cardiopulmonary and musculoskeletal standpoint. You will gain the necessary understanding of the unique and characteristic responses to both submaximal and maximal work in relation to aerobic, anaerobic and strength exercise which will be further enhanced in future modules. Central to the teaching and learning of this module is the opportunity to collect your individual exercise data in laboratory classes to support the lecture-based content. |
| Bioenergetics | You'll consider the biological and chemical mechanisms which sustain and support life and form the foundation of exercise physiology. | Microbiology | This module focuses on the microbiological world, covering, bacteria, fungi and protists. Topics including evolution, structure and function and the impact of microorganisms are covered, with an emphasis of their practical applications. You will continue to build on your practical techniques, developing microscopy and microbiological skills. |
| Cell and Developmental Biology | This module takes you on a trip around the fundamental unit of life – the cell. With particular emphasis on its dynamic nature, and using examples from bacteria to those within complex multicellular organisms, you will learn how cells use membranes and proteins to organise themselves, and how they communicate both within and outside of their confines. | Physical Chemistry for the Life Sciences | Introduces the ideas of the fundamental structure of matter and how chemical processes may be measured. The principles of thermodynamics and kinetics are covered, with an emphasis on applications to biological systems. Basic quantum mechanical explanations are used in exploring the spectroscopic techniques that are used for determining complex molecular structures and the fundamental properties of solutions are also explained. Laboratory-based experiments are used to further illustrate the basic principles of these topics. |
| Ecology | In this module you study the key concepts, knowledge and unanswered questions in the ecology of populations, communities and ecosystems. We look at some important historical figures and their legacy, and consider the various approaches to ecological science, including description, experiments and theoretical models. Wherever feasible, we'll look at how a general predictive theory can emerge. In laboratory practicals, you will undertake experiments and also undergo some circuit training in the 'ecology gym'. | Plants | Life on Earth is dependent on plants. This module will equip you with a basic understanding of plant science, from the evolution and function of their unique structures, biochemistries and life strategies, through their responses to the environment and other organisms, to their exploitation by humankind as a source of food, materials and energy. |
| Essential Elements of Life | This module introduces the key, fundamental concepts of inorganic chemistry, starting with molecular structure and bonding, leading to an investigation of transition metal chemistry. The study of the basic principles concludes with an examination of the role that inorganic compounds play in biological and medicinal systems and laboratory experiments allow you to further enhance your understanding of this topic. | Structure and Reactivity of Organic Compounds 1 | This module begins to explore the structure and reactivity of organic compounds, starting with an examination of bonding before using a mechanistic approach to study the reactivity of the common functional groups. This module provides fundamental information on aspects of 3D molecular structure (stereochemistry) and the basics of addition, substitution and elimination reactions and illustrates these topics with laboratory experiments. |
| Fundamental Principles for Bioscientists | Introduces the underlying concepts required for scientific investigation, including modern laboratory techniques, experimental design and presenting scientific data. Particular emphasis is given to learning the quantitative skills required to analysing experimental results. Team development training and small-group tutorial work are features of this module. | | |
| Genetics | You'll gain a basic understanding of how information is stored and expressed in cells, genes, genomics and genetic engineering, the differential role of genes and the environment on expression of a phenotype, and of the behaviour of genes in populations. | | |

Year 2

| | | | |
|--|--|--|--|
| Advanced Cell Biology | This module builds on the first year module, <i>Cell and Developmental Biology</i> , focusing on processes such as maintenance of cell shape, cell division, cell motility and autophagy, and the regulation of these processes, to provide you with an understanding of the complex spatio-temporal organisation required for cell function. | Genomics and Introductory Bioinformatics | We focus on state-of-the-art technology for analysis of genomes and gene expression and critically discuss their use in biological research and biotechnology. Practical classes consolidate use of internet-based genomics tools and provide a platform to critically discuss case studies. |
| Analytical Techniques in Biochemistry | Introduces you to the state-of-the-art methods used to analyse and characterise biological macromolecules. Lectures are supplemented by practical sessions where you learn how to fractionate proteins from cells, purify proteins by chromatographic methods, assay enzymes and analyse results by gel electrophoresis. | Marine Biology | This module covers oceanography, marine taxonomy, fisheries and food webs, coral reefs, reproduction and threats to marine ecosystems. Practical sessions consider the biology of plankton and marine conservation. This module is a pre-requisite for the Coral Reef Field Course. |
| Animal Ecophysiology | This module explores the major physiological processes in animals and how these relate to ecological niche. You'll cover metabolism, respiration, endocrinology, reproduction and osmoregulation. | Medical and General Microbiology | Considers modern approaches to pathogen detection and the challenges posed by the spread of antibiotic resistance. |
| Bioinorganic Chemistry | This module allows you to gain a more in-depth understanding of the processes of inorganic chemistry, including important redox reactions and bio-inorganic chemistry. You then move on to study the vital importance of metallochemistry in biology and medicine. | Metabolism | Gain an understanding of selected aspects of metabolism, important in both medicine and biotechnology. |
| Biomechanics and Kinesiology | Develops your understanding of angular kinematics and angular kinetics and your ability to apply these concepts to the analysis of human movement and sports performance. | Molecular Biology of the Gene | This module covers a range of topics including cellular structure, genome organisation and replication, and genome expression, including protein modification and targeting. |
| Coral Reef Field Course | One of two popular field courses, this introduces the ecology and conservation of tropical marine habitats including coral reefs, seagrass beds and mangroves in the Bahamas. The course encompasses travel to the Bahamas for a week of snorkelling where target research projects will be spent on patch reefs, seagrass beds and mangroves. | Practical Skills in Ecology Field Course | This popular field-based module runs in September and involves attendance on a week-long UK-based field course. There is extensive project work and experience will be gained in many of the basic skills, measurement and survey techniques used by modern ecologists. |
| Ecology and Environment | Develops your understanding of some of the fundamental concepts, methods and results in the scientific study of ecology, biodiversity and the environment. The module uses examples from both terrestrial and aquatic systems and is a valuable complement to some of our ecology field courses. | Quantitative Research Methods | Provides the tools required for a dissertation using quantitative methods. It also serves to aid your critical digestion of the results of research articles, creating an appreciation for the rationale involved in making the correct choices when using statistical analyses. |
| Evolution and Informatics | Explores the use of methods to reconstruct evolutionary history via phylogenetic trees, the concept of natural selection, and modes of speciation. Practical classes make use of a range of unique resources maintained in Biosciences. | Research Skills and Bioethics | This module continues to enhance your quantitative skills, preparing you for research and employment in the biosciences, while providing core skills required for a successful third year independent research project or dissertation. Lectures on bioethics will introduce ethical, philosophical and social issues emerging from modern research in the biosciences. |
| Exercise Physiology | In this module you explore the body's physiological response to exercise. The module deals with the assessment and interpretation of aerobic and anaerobic fitness and performance, blood lactate, lactate and ventilatory thresholds and cardiovascular control during exercise. | Structure and Reactivity of Organic Compounds 2 | Starting with an extension of the chemistry of carbonyl compounds studied in the first year, this module will add key reactions that are used in constructing complex molecular frameworks. The reactions of aromatic compounds are used to explain the chemistry of aromatic heterocycles, the most abundant compounds in nature and pharmaceuticals. Modern spectroscopic methods will be applied to determine the structure of compounds that you will prepare in the laboratory. |
| Forensic Science | In this module we cover all aspects of forensic science from the physical principles of ballistics to DNA fingerprinting and the chemical analysis of drugs. A large part of the module is taught by visiting experts, who use these techniques daily, enabling you to really understand the practical aspects of forensic science. | | |

Final Year

| | | | |
|--|--|---|--|
| Cell Cycle and Cancer | This module brings you up-to-date with selected topics in cell and molecular biology that are relevant to an understanding of cancer biology. | Horizons of Biochemical Research | In this module you will actively engage with recent research in diverse areas of biochemistry, gaining an insight into the progress that has been made, the range of areas being explored, and the challenges for the next generation of scientists. |
| Cellular Basis of Immunity | This module will introduce you to the science of immunology. Key components of the immune system are explored and current research topics used to illustrate how antibodies are engineered and used in the diagnosis and prevention of diseases in contemporary medicine and agriculture. | Mammalian Biology | Examines key characteristics of mammals including reproductive biology, parental care, endothermy, concepts of behaviour and ecology. Topics will be illustrated by case studies of wild mammals. |
| Current Issues in Marine Biology | This module covers some of the major threats to the marine environment such as climate change and ocean acidification, pollution and introduction of invasive species. Also covered are the biology of corals, seagrass beds and mangroves, threats to the Arctic ecosystems and the use of population genetics in studying marine management. | Molecular Basis of Infection | Considers the molecular mechanisms by which bacterial and fungal pathogens invade, colonise and grow within animal and plant hosts. |
| Developmental Biology | Explores specified topics in developmental biology that include stem cell biology, neurogenesis, organogenesis and evolutionary developmental biology. | Organic Synthesis | In this module we show how the basic reactions covered in the first and second years can be applied to the synthesis of biologically important molecules such as pharmaceuticals. Methods for designing synthetic routes to these compounds will also be explained using case studies. |
| Dissertations or Independent Research Project | Both the Dissertations and Research Project give you the opportunity to undertake your own independent and original piece of research, under the supervision of a member of staff. They may be based in the field or laboratory and will deal with questions and issues at the cutting-edge of the discipline. | Pharmacology and Medicinal Chemistry | You'll learn how drugs are metabolised in the body and what features are important in their design. Specific discussion of certain drug types are covered in detail. Scientists from leading pharmaceutical companies provide guest lectures on state-of-the-art approaches to new drug synthesis and discovery. |
| Ecology of Environmental Change | In this module we will bring together science and politics to present a fact-based picture of human impacts on our changing world. | Science Communication | In this module you'll gain an understanding of how science is disseminated to the public via journalists and documentary makers and also how science is communicated to governments, politicians and policy makers. You'll examine good and bad strategies for communicating science to various audiences and how science information and misinformation can be used to change public perception. |
| Ecotoxicology | Ecotoxicology is the science of how chemicals impact on our environment and wildlife. You'll develop an awareness of the major current theories and concepts in this field and will study how the bodies of animals respond to chemicals discharged in the environment. | Secondary Metabolism and Metabolites | This module illustrates the remarkable structural diversity of the organic compounds that are found in nature and shows the chemistry behind how they are synthesised in living organisms. Medical and other uses of these compounds will be explained. |
| Environmental Microbiology | This module covers bacterial survival in the environment, including extreme environments, and the impact of climate change on pathogen dispersal and survival. | The Cytoskeleton in Human Disease | This module provides insight into the molecular basis of human and plant diseases. The emphasis is on the role of the cytoskeleton and intracellular motility in various neurodegenerative genetic disorders, such as; Lissencephaly, Alzheimer's disease, Huntington's disease, bacterial listeriosis and tuberculosis, organelle biogenesis disorders, vertebrate left-right asymmetry defects and in deregulation of mitosis in cancer. |
| Evolution of Infectious Diseases | Considers the diversity and evolution of parasitic and pathogenic agents using the perspective of modern biological methods. | | |
| Frontiers in Molecular Cell Biology | In this module we will explore selected topics at the forefront of cell biology and you will be introduced to the range of experimental techniques that are used to investigate how cells function. | | |



Learning and teaching

Learning and teaching is through lectures, seminars, tutorials, field work, laboratory sessions and independent study with internationally recognised, research-active staff. You'll undertake challenging, independent research projects dealing with questions and issues at the cutting-edge of life science research. Regular research seminars, by our staff and visiting lecturers, bring you the latest issues on a wide range of research topics.

Our staff have close links with a wide range of industrial, medical and conservation organisations, who you may be able to collaborate with for your final year research project. Many of our students also work with these organisations during their vacations.

You'll have more than 15 hours of direct contact time per week with your tutors in your first year and will be expected to supplement your lectures with independent study. You should expect your total workload to average about 40 hours per week during term time.

We frequently introduce new methods of learning and teaching, including increasing use of interactive computer-based approaches to learning through our virtual learning environment, where the details of all modules are stored in an easily navigable website. You can access detailed information about modules and learning outcomes and interact through activities such as the discussion forums.

Research-inspired teaching

We believe that every student benefits from being part of a culture that is inspired by research and being taught by experts. You'll discuss the very latest ideas in seminars and tutorials and, in appropriate degree programmes, become an active member of a research team.

The complementary expertise of our staff ensures a vibrant, collaborative research culture within our research groups: Behaviour; Biological Chemistry; Ecology and Conservation; Environment and Evolution; Evolution; Microbes and Disease; Plant Biology; and Theoretical and Computational Biosciences.

Assessment

You must pass your first year assessment in order to progress to the second year, but the results do not count towards your degree classification. For three-year programmes, the assessments in the second and third years contribute to your final degree classification. For four-year programmes the assessments in the fourth year also contribute to your final degree classification.

For full details of the assessment criteria for each module, check the undergraduate section of our website at www.exeter.ac.uk/biosciences

Academic support

All students have a personal tutor who is available for advice and support throughout your studies. There are also a number of services on campus where you can get advice and information, including the Students' Guild Advice Unit. You can find further information about all the services in the University's undergraduate prospectus or online at www.exeter.ac.uk/undergraduate

Study abroad

Our four-year 'With Study Abroad' degrees give you the opportunity to spend your third year studying at a partner university overseas. We have a number of partners in Europe, North America and the Pacific Rim. For further information see www.exeter.ac.uk/biosciences/undergraduate/studyabroad

You must apply directly through UCAS for the four-year 'With Study Abroad' degree programmes and there are higher entry requirements compared with our three-year degrees. There are also strict progression criteria through each year: you must attain an overall Upper Second Class result in both your first year and second year to meet the progression criteria in Exeter and the entrance criteria of the host institution.



Careers

Key skills are integrated into all our undergraduate programmes to ensure students gain not just subject knowledge, but the transferable skills valued by employers such as analytical problem solving, teamwork and organising and communicating information. Group learning, peer level assessment and key vocational skills, such as advanced laboratory training within molecular biology, also enhance the employability of our students.

Your degree will equip you with a comprehensive understanding of the very latest developments within the consistently evolving field of biosciences, and how they form a central part of global thinking on a wide range of topics. The majority of our

Biosciences undergraduate programmes are recognised by the Society of Biology. We also have an excellent reputation with graduate recruiters and our students and graduates compete very successfully in the employment market.

In today's competitive job market, employers look much more favourably on graduates with relevant work experience. We provide all of our students with opportunities to gain high quality work experience during their degrees and work closely with careers staff and alumni to support students on both our Streatham and Cornwall campuses. You will be encouraged to take the opportunity to develop your work-based skills through placements during the course of your degree.

Our BSc Biological Sciences, Biochemistry and Biological and Medicinal Chemistry programmes all have a four-year option to spend a year-long placement in business or industry. In the past students have worked with host organisations such as Shell, Cefas and GSK. Biosciences students in Cornwall have undertaken work placements at a variety of organisations including the RSPCA, RSPB, Environment Agency and National Trust.

For further information about what the Employability Service offers at Exeter visit www.exeter.ac.uk/undergraduate/employability

Examples of the destinations of our recent graduates:

Occupations

Research Assistant // Genetic Technologist // Clinical Research Scientist // Healthcare Technical Officer // Animal Carer // Turtle Husbandry Assistant // Microbiology Technician // Lab Technician // Fertility Technician // Portfolio Account Manager // Case Handling Assistant // Sanctuary Manager

Employers

National Health Service (NHS) // London Bio Packaging // Johnson & Johnson Medical // Quotient Bio Research // Bristol Natural History Consortium // London Zoo // Skandia // The Donkey Sanctuary // Environment Agency // UCL // Institute of Child Health // Axiom Laboratories // Deloitte // Explore Learning

Examples of subject areas of further study followed by our graduates:

- Food security
- Evolutionary and behavioural ecology
- Osteopathy
- Immunology
- Animal behaviour
- Evolutionary biology
- Molecular biophysics
- Conservation and biodiversity
- Biofuels
- Biotechnology and business
- Ecology
- Wildlife management and conservation
- Teaching
- Law
- Medicine



Entry requirements and applying

You can find a summary of our typical entry requirements on the inside front cover of this brochure. You will need a GCE A level (or equivalent) in Biology and you will also preferably need another science subject, which can include one of the following: Biology/Human Biology*; Chemistry; Computing; Design and Technology; Electronics; Environmental Studies; Geography; Geology; Maths/Pure Maths/ Further Maths*; Physical Education; Physics; Psychology; Science (applied); Statistics.

A level Chemistry is normally required for the Biochemistry and the Biological and Medicinal Chemistry degree programmes.

You will also need the equivalent of GCSE Mathematics at grade B and either GCSE Double Award Science or GCSE Chemistry at grade C.

The full and most up-to-date information about Biosciences is on the undergraduate website at www.exeter.ac.uk/undergraduate/degrees/biosciences and we strongly advise that you check this before attending an open day or making your application.

We make every effort to ensure that the entry requirements are as up-to-date as possible in our printed literature. However, since this is printed well in advance of the start of the admissions cycle, in some cases our entry requirements and offers will change.

If you are an international student you should consult our general and subject-specific entry requirements information for A levels and the International Baccalaureate, but the University also recognises a wide range of international qualifications. You can find further information about academic and English language entry requirements at www.exeter.ac.uk/undergraduate/international

For information on the application, decision, offer and confirmation process, please visit www.exeter.ac.uk/undergraduate/applications

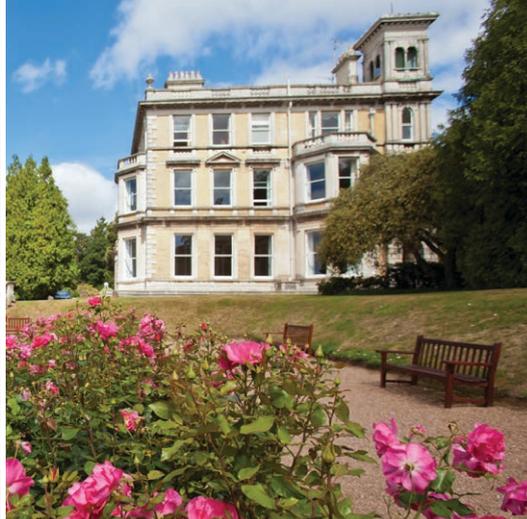
**If more than one of these is taken they would only count as one 'science' but could count as two A levels towards our general requirements.*



The University of Exeter isn't just somewhere where you come to study; it gives you the opportunity to grow as an individual. From sports to drama, media and fundraising, there is something for everyone to get involved with outside your degree.

I've been able to spend a year working in industry, which has counted towards my degree. During this year I matured as a student and a person, and had the chance to apply a lot of the theoretical subject material taught in lectures to industrial practice, as well as observing science in an applied setting. With so many more people attending university, it's vital to stand out from your peers and opportunities such as a year in industry and the Exeter Award can really help you to do so. I found my time at Exeter so welcoming and fulfilling and I will be sad to say goodbye when I leave.

RUTH ROWLAND-JONES, BSC BIOLOGICAL AND MEDICINAL CHEMISTRY WITH INDUSTRIAL PLACEMENT



Academic excellence

- The University of Exeter has been named as *The Sunday Times* University of the Year and is also ranked 7th in the UK in its University Guide 2013
- We are also in the top one per cent of universities in the world, and a regular fixture in the top 10 league tables in *The Guardian* and *The Times*
- University of Exeter students are among the most satisfied in the UK: we are ranked 6th in the UK in the National Student Survey 2012 amongst traditional universities and 3rd for the quality of our teaching
- Our teaching is inspired by our research, nearly 90 per cent of which was ranked as internationally recognised by the 2008 Research Assessment Exercise
- We attract the best qualified students in the country; we're in the top 10 for the number of students graduating with a first or 2:1 and for entry standards (students achieving AAB at A level and above)

A vibrant community

- Our students are the most engaged in the country, smashing participation records in student elections for the last two years running
- The Students' Guild in Exeter and FXU in Cornwall offer an unrivalled selection of societies, from sport to culture to community volunteering groups – over 8,000 students take part in more than 200 societies

- We are a top 10 UK university for sport and provide excellent facilities and support whether you want to compete at the highest level or just for fun
- We work with our students to continually improve the education on offer, via initiatives which put students at the heart of our decision making process
- We're a truly international community, with students from over 130 countries and staff of 50 different nationalities

Ambition for the future

- We equip you with the skills employers need via business placements, study abroad schemes, volunteering opportunities, careers advice from successful alumni and much more
- Despite tough economic times, we've improved our employment record year-on-year: more than 90 per cent of students get a job or further study place within six months of graduating
- We've invested over £350 million in our three campuses, from new accommodation and research labs to state-of-the-art lecture theatres and library spaces

Explore the possibilities

Open Days

Come and visit our beautiful campuses. We hold Open Days in Exeter and Cornwall twice a year in June and September.

Campus Tours

We run Campus Tours at the Streatham Campus on weekdays during term time and

at the Cornwall Campus on Wednesday and Friday afternoons. You'll be shown round by a current student, who'll give you a first-hand account of what it's like to live and study here.

For full details and to book your place at an open day or campus tour, visit www.exeter.ac.uk/opensdays

For enquiries contact:

Exeter: phone: +44 (0)1392 724043,
email: visitus@exeter.ac.uk

Cornwall: phone: +44 (0)1326 371801,
email: cornwall@exeter.ac.uk

Offer-Holder Visit Days

Once you receive confirmation of an offer we'll contact you with an invitation to visit us on an Offer-Holder Visit Day, which will give you the chance to find out more about your programme and department and decide whether to accept our offer. While this opportunity to visit includes a campus tour and formal introduction to the department, much emphasis is placed on a more informal period for questions and answers. A number of our current students also take part on these days, leading tours and giving you the opportunity to ask them what studying here is really like! Offer-Holder Visit Days take place during the period January to April.



www.exeter.ac.uk/biosciences

This document forms part of the University's Undergraduate Prospectus. Every effort has been made to ensure that the information contained in the Prospectus is correct at the time of going to print. The University will endeavour to deliver programmes and other services in accordance with the descriptions provided on the website and in this prospectus. The University reserves the right to make variations to programme content, entry requirements and methods of delivery and to discontinue, merge or combine programmes, both before and after a student's admission to the University. Full terms and conditions can be found at www.exeter.ac.uk/undergraduate/applications/disclaimer



Find us on Facebook and Twitter:
www.facebook.com/exeteruni
www.twitter.com/uniofexeter

100% recycled

2013CAM5019