



BSc (Hons) Applied Zoology

UCAS code Z001

Institution code H12

Duration 4 years (full-time) including a one-year work placement

Start date September 2019

Location [Harper Adams University campus](#) (and location of work placement)

The course

Zoologists are scientists who study animals, from the largest mammals to the smallest insects. Understanding them and their communities gives an insight into both human and animal life and how they can be sustained in the face of global challenges, from climate change to food security.

Here at Harper Adams, you'll study whole organisms, not just species at the molecular level. You'll look at animals' physiology, behaviour, and how they interact with other species and their environments, in order to preserve important habitats and manage wildlife in light of climate change.

Zoologists help protect endangered species and wildlife from the dangers of habitat loss, disease, invasive species, and climate change, and to protect and learn more about human life in the process.

You'll study a wide range of species from farm livestock to companion animals and exotics, to UK wildlife such as insects, with a strong emphasis on field and laboratory work – both skills in demand by employers.

Your lecturers are animal scientists, entomologists, conservationists, environmental specialists, veterinarians and many more highly experienced staff.

A-level entry requirements

- Offers tend to be in the region of **104** UCAS points (min 3 x A2 passes)
- Students should typically be studying **3 subjects at A2 level** to be considered
- An understanding of a biological science based subject, for example Biology, Human Biology, Applied Science or Physical Education would be preferable. We would welcome applications from candidates offering other evidence of their suitability for this programme
- When combining qualifications no more than one Subsidiary Diploma will be considered alongside A levels (two A levels for BSc)
- General Studies and Critical Thinking are encouraged but **not** included in grades required
- Applicants are encouraged to gain experience working with a number of different animals in different settings. Applicants should include details of this in their application. Experience of different animals will enable reflection and will help with many aspects as students' progress through the course.
- **4 GCSEs at grade C/4 or above**, including English Language, Maths and a Science
- Applicants can expect to receive offers including specific grades in specific subjects (for example, a B or C at A level, or an M or D for BTEC modules)
- Key Skills (and other level 2 variants) and First Certificates/Diplomas are not accepted in place of GCSE passes
- Overseas applicants please check our [English Language Requirements](#)
- The majority of candidates will not be called for an interview and a decision will be made via UCAS Track. However, for some students a telephone interview or campus based guidance session will be

required. We will simply want to meet you to understand if the course is the right choice for you and to discuss your application in more detail. We will be keen to know your reasons for choosing the course and your career aspirations.

Note: Entry Requirements are for guidance only, please check the UCAS website or contact Admissions for further information.

Work placement

You'll learn a lot in your third year, spent working in a relevant field in the UK or overseas. You may choose a placement job that builds on your interest in livestock, on a farm or working with companion animals in a rescue centre or animal charity such as the RSPCA or PDSA. Or maybe you'll take the opportunity to work with species you won't find at Harper Adams such as zoo or marine animals. You might work for Chester Zoo, for example, or the Durrell Wildlife Conservation. Alternatively, a pharmaceutical company or nutritional company might appeal. The choice is yours, but we'll be there with advice and support both before and during your placement.

Teaching and learning

What you study

All Zoology students share a common first year, learning about animal health and behaviour, and conservation. Modules will include survey and field skills, physiology, ecology, and adaptive biology.

You'll start to specialise in your second year, with two of your eight modules focussed on applied zoology. Returning from work placement, you'll specialise further in your fourth year, with more dedicated modules and a focused research project that gives you the chance to explore a topic that interests you or furthers your career ambitions.

Where you will study

Learning extends beyond the classroom. There will be lots of applied work in our extensive laboratories, on our commercial farm on-campus, forests and pools, in our Companion Animal House, entomology laboratory, the Jean Jackson glasshouse, and entomology resource room with its insect collection. You'll also learn off-site through field trips and work placement.

Applied field work

You'll take part in at least two residential field courses. In your first year you will head to the Slapton Ley Field Studies Council Centre in Devon where you will learn to conduct independent field research and do a group project. There'll be an opportunity to take part in an overseas course in Spain or Portugal in your second year. In Year 4 you'll design, execute and evaluate a group research project during a further residential course on the island of Anglesey.

Teaching and learning

Learning at Higher Education level is a big step up from further education so we make sure you get lots of advice and support. Everyone learns differently and in the workplace you'll need to work in different ways, so we make sure our courses test you in every way possible. You will attend lectures and tutorials, do hands-on work, experience field trips, sit exams, and complete coursework assignments. Topics are based on real world situations, such as animal cognition, animal learning, genetics and evolution.

Assessment methods

There will be summative assessed course work throughout the programme, and you will receive written feedback on all course work to help you improve. End-of-module assessments will take place in May/June of each academic year. Course work may be reports, presentations or portfolios, produced individually or in a team.

Careers

With an applied zoology degree you could become a zoologist or research scientist. You may find yourself improving agricultural crops and livestock, conserving endangered species and habitats, or developing and testing new drugs. Or you may work in disease and pest control, in field trials, animal welfare and education, or perhaps developing policies and regulations.

What will I study?

Year	Study time (The percentage of time spent in different learning activities)			Assessment methods (This is the breakdown of assessment methods)		
	% time in lectures, seminars and similar	% time in independent study	% time on placement	Written exams	Practical exams	Coursework
1	32%	68%	0%	39%	0%	61%
2	27%	73%	0%	39%	0%	61%
3	0%	0%	100%	0%	0%	100%
4	19%	81%	0%	14%	16%	70%

Year 1	Year 2	Year 3	Year 4
Academic Skills Development (A4001C17) 15	Research Methods for Environmental Scientists (C501017) 15	Placement year	Honours Research Project (HRPROJ) 30
Introduction to Ecology (C4004C17) 15	Animal Biotechnology and Genetics (A5004C17) 15		Geographical Information Systems and Land Use (C6009C17) 15
Introduction to the Natural Environment (C4006C17) 15	Animal Ethics (A5014C17) 15		Environment and Geography Field Course (C6007C17) 15
Environmental Survey and Field Skills (C4003C17) 15	Aquatic Ecosystems (C17) 15		Management of Captive Aquatic Systems (C17) 15
Fundamentals of Physiology (A4007C17) 15	Principles of Animal Behaviour and Welfare (A5008C17) 15		Applied Companion Animal Health, Welfare and Behaviour (A6007C17) 15
Adaptive Biology (A4002C17) 15	Wildlife Identification and Conservation (C5011C17) 15		Population and Community Ecology (C17) 15
Introduction to Animal Welfare, Behaviour and Ethics (A4009C17) 15	Philosophy of Zoos (A5007C17) 15		International Perspectives on the Management of Animal Populations (C6010C17) 15
Principles of Animal Health (A4011C17) 15	Conservation Biology (C17) 15		

Academic Skills Development

Year of study 1

Code A4001C17

Credits 15

Core/option Core

Module contact [Mrs Emily Chapman-Waterhouse](#)

This module supports the development of students' personal, academic, employability and self-management skills for students in the first year of their undergraduate studies. Whilst the module provides a basis for the rest of the Professional Scholarship Programme it also supports learning in every other module. The module will be delivered throughout the academic year to students on animal-health related undergraduate courses. The main rationale for a first year module of this type is to ensure all students are fully equipped for higher education and to provide space in the curriculum in which to develop relevant skills to aid progression within and out with technically oriented modules. The key themes addressed by this module include transition into higher education and beyond the first year, approaches to learning, independent study, effective communication for animal health-related vocations, reading and reviewing literature, referencing convention, using feedback for learning and using technology to enhance learning. Whilst the roots of the module are in academic skill development, learning resources and assessments will be tailored to the vocational areas relevant to students. Students will need to actively undertake a self- review of progress at regular intervals and develop action plans for self-development.

Introduction to Ecology

Year of study 1
Code C4004C17
Credits 15
Core/option Core
Module contact [Nicky Hunter](#)

Ecology is about understanding the dynamic changes in individuals, populations, communities and ecosystems in relation to each other and the physical environment. This requires knowledge of the essential processes that determine the distribution and abundance of organisms and the variety of complex biotic and abiotic interactions that take place. This module is designed to provide students with a general understanding of the ecology of living systems together with an introduction to basic ecological theory. This module will include a field studies element which will deliver the practical elements of identification, sampling and analysis of data collected.

Introduction to the Natural Environment

Year of study 1
Code C4006C17
Credits 15
Core/option Core
Module contact [Simon Irvin](#)

The countryside and the quality of the rural environment are inextricably linked to studies in the natural environment. This module is designed to investigate the many aspects of the natural environment which impact on the British countryside. This will include the study of rainfall patterns in the UK and causes of climatic change, which has a marked effect on the range of natural habitats in the British countryside. The variety and nature of soils in the UK and how these affect the land quality will be considered. Conservation and the assessment, creation and management of habitats commonly found in, and around agricultural lowland sites and the impact of pollution from agricultural sources will be investigated.

- Outline the hydrological cycle in the UK and the causes and effects of climatic change on the natural environment.
- Identify and assess soil relationships, including soil texture, structure, organic matter and soil processes such as erosion.
- Demonstrate a need for conservation of species and habitat protection.
- Recognise a variety of habitats on lowland farmland and outline how these can be managed to the benefit of the environment.
- State the main sources of agricultural pollution and how these can be controlled.

Environmental Survey and Field Skills

Year of study 1
Code C4003C17
Credits 15
Core/option Core
Module contact [Simon Irvin](#)

This module provides an essential understanding of the main components of applied contemporary field survey / monitoring techniques and procedures. It provides experience in the practical application of these techniques and procedures across a representative range of habitats and environments and vital awareness of risk assessment in field survey work.

The skills and knowledge gained will enable students to undertake survey and monitoring work using a range of practical methods, understand the range of techniques involved and their relative strengths and limitations and to present and interpret data in a coherent and appropriate way.

This module complements the modules at level 4: Introduction to the Natural Environment and Introduction

to Ecology and links to the level 5 module Habitat Ecology and Conservation Management. These modules are core modules for all routes accessing this module and form a fundamental knowledge and practical base for any student entering the environmental and wildlife sector. The module content will also provide material which directly relevant to placement work undertaken by the majority of the students.

Fundamentals of Physiology

Year of study 1
Code A4007C17
Credits 15
Core/option Core
Module contact [Jim Huntington](#)

This module introduces important anatomical terms and describes the concepts required to understand the processes involved in the functioning of organ systems and the maintenance of homeostasis in vertebrate species, including humans, food producing animals, companion animals and other species addressed within the programmes this module has been validated for. A broad knowledge of normal body structure and functioning provided by this module will be invaluable for students studying modules within the animal related programmes such as *Companion Animal Studies*, *Principles of Animal Health*, and *Animal Disease Sciences*. For those studying food related programmes the module will be invaluable for the study of *Well-being Through the Lifecycle* and later modules such as *Advanced Aspects of Nutrition*. This module is designed to be a prerequisite (for some courses) to either *Veterinary Physiology* or *Applied Anatomy and Physiology*.

Adaptive Biology

Year of study 1
Code A4002C17
Credits 15
Core/option Core
Module contact [Professor Mark Rutter](#)

This module provides a broad overview of how the process of evolution through Darwinian natural selection has resulted in the diversity of life seen on Earth. Historic theories of evolution are evaluated, and the mechanisms underpinning evolution are explored, from microevolution, through speciation to macroevolution. The role of DNA and mechanisms of inheritance are studied, as is animal taxonomy. The evolution of humans is considered, along with the history and process of animal domestication. The effects of evolution and domestication on animal physiology and behaviour are explored. The module is designed to give the students a deeper understanding of evolution and its role underpinning the biological sciences.

Introduction to Animal Welfare, Behaviour and Ethics

Year of study 1
Code A4009C17
Credits 15
Core/option Core

This module will introduce students to the science of animal behaviour and the importance of behaviour in our understanding of animal welfare. It will also consider the ethics of society's usage of different types of animals and the role of legislation and different organisations in the promotion of the interests of animals. Examples will be drawn from a range of diverse species and scenarios to illustrate the principles and practices discussed.

The content of this module will be of benefit to anyone considering working either directly or indirectly with animals in a range of environments. An appreciation of the science of animal behaviour and welfare and how underlying ethical values may influence the acceptability of animal use, will enhance the ability of the individual to undertake welfare assessments of the animals they are responsible for. The knowledge and understanding gained in the module will be an important foundation for those going on to study the module *Principles of Animal Welfare and Behaviour*.

Principles of Animal Health

Year of study 1
Code A4011C17
Credits 15
Core/option Core
Module contact [Dr Malgorzata Behnke](#)

The immune system of domestic animals faces challenges from micro-organisms and parasites on a daily basis. Furthermore, the general public are at risk from zoonotic micro-organisms and parasites from the animals they keep and come in to contact with.

This module aims to develop students' knowledge and understanding of the micro-organisms and parasites that are important in animal health and the processes by which animals defend themselves against invasions of foreign organisms. This provides a crucial first step in understanding how these diseases can be controlled and will facilitate future learning in other modules which focus in more detail on control measures. Zoonotic risks are highlighted to enable students to identify at-risk situations and populations.

Research Methods for Environmental Scientists

Year of study 2
Code C501017
Credits 15
Core/option Core
Module contact [Dr Andrew Cherrill](#)

The module develops the skills and knowledge necessary to successfully complete the Honours Research Project. Enhanced research confidence will also be an employability skill for the Placement Period and careers on graduation.

The module will cover the key elements of the research process, set in the context of the student's own course discipline. Students will examine the academic role of research and how it informs professional and managerial practice. They will enhance their ability to locate, select and critically evaluate information associated with a particular problem, using a range of sources and particularly peer reviewed empirical studies. By carrying out statistical analysis using appropriate software, the students will develop their ICT skills and further their understanding of the role of statistics in the research process.

Animal Biotechnology and Genetics

Year of study 2
Code A5004C17
Credits 15
Core/option Core
Module contact [Dr Sandy Mackenzie](#)

This module develops the principles of animal breeding, genetics and biotechnology. It will cover the application of current biotechnology technologies used to enhance animal production, health and breeding. The knowledge gained from this module leads on from Bioscience for Agriculture and Animal Production Systems and complements other modules in which the key features of biotechnology and genetics are discussed.

Animal Ethics

Year of study 2
Code A5014C17
Credits 15
Core/option Core
Module contact [Mr Stephen Baugh](#)

Most of us interact with animals on a daily basis, whether that be via our pets, via commercial animals in a work environment or through the animal products that most of us eat. Through these interactions animals are treated by humans in particular ways dependent on many factors including species, utility, religious or cultural beliefs and beliefs based on an animal's sentience or intrinsic value. This module considers our interactions with animals and explores the challenges we face when making moral judgements about how we utilise and treat animals. We will consider many questions that underpin our beliefs about other species and our interactions with them. How should we treat animals? Is it acceptable to use animals for our own benefit? Do animals have intrinsic value? Do animals have rights?

The main ethical theories that are useful when exploring these issues are discussed and explained and examples of how these theories can be applied to our interactions with animals are discussed.

Aquatic Ecosystems

Year of study 2
Code C17
Credits 15
Core/option Core

Please contact the course manager for details of this module.

Principles of Animal Behaviour and Welfare

Year of study 2
Code A5008C17
Credits 15
Core/option Core
Module contact [Dr Graham Scott](#)

Their complex behaviour is one of the main factors that distinguish the Animalia from the other Kingdoms of Life. This module aims to explore the richness and diversity of the behaviour we see in the animal kingdom, considering the various factors that have influenced its evolution. Although there will be an emphasis on the more complex behaviour patterns seen in the higher animals, this module will consider the behaviour of animals in general, and will not focus on just the domesticated species. This diverse approach will help in the understanding of the general principles which underpin the development of the various patterns of behaviour we observe in animals.

Animal welfare is of major concern to those working in the animal industry as well as the general public. In this module, students are encouraged to consider the issues that affect the welfare of many groups of animals such as farm, companion, zoo and research animals. The physiological and behavioural changes which occur when welfare is compromised will be studied and how these may be used to assess an animal's welfare status. The philosophical and ethical considerations of how we use animals will be discussed and an overview is given of the legislation which governs animal welfare across a range of species.

Wildlife Identification and Conservation

Year of study 2
Code C5011C17
Credits 15
Core/option Core
Module contact [Nicky Hunter](#)

This module aims to provide students with an extension of knowledge from the level 4 ecology module and to focus primarily on the synthesis and analysis of the ecological requirements of species and habitats, and the issues around conservation and funding currently in the UK. In order to fully understand the ecology of species, correct identification and adaptation features for the major groups of fauna and flora needs to be recognised.

A practical knowledge and skills-based understanding of the selection and use of identification keys and community classification systems is one of the corner stones to effective assessment of biodiversity for conservation. Students will develop practical knowledge of, and skills in, the use of species identification techniques. Particular attention will be focused on species that are associated with the UK countryside, but the module will also address globally applicable general principles and concepts. Essentially a hands-on approach to learning is encouraged introducing students to the flora and fauna found in a range of habitats which will reinforce the competences of survey skills studied previously.

Philosophy of Zoos

Year of study 2
Code A5007C17
Credits 15
Core/option Core
Module contact [Dr Graham Scott](#)

Zoos and menageries began as prestigious private collections, notably amongst the ruling classes, though even from the times of Alexander, animal collections enabled the study of animals. In the 19th Century many zoos were established as a prestigious addition City resources (particularly in capital cities) where the middle classes could promenade and be entertained, as part of the wholesome "self-improvement". Some Zoos were established to protect endangered species (e.g. bison). The primary role of entertainment continued to the 1960s but as societies views have changed, zoos have had to revise their "missions". Through the British and Irish Association of Zoos and Aquaria (BIAZA) and similar groups zoos have expanded their role. Legislation has also been placed on the statute books which establish criteria for licensing of zoos. These include zoos establishing, for example, educational, breeding, conservation and preservation. Furthermore the types of animal enclosure have changed as the behavioural and welfare requirements of species have been appreciated. The use of enrichments is particularly important to prevent boredom and welfare insults to the animals on display. The survival of zoos depends on public understanding of their aims, objectives and policies. The future of animal collections will mean changing roles and involvement with captive breeding and visitor participation. However, there is an increasingly rich resource of media material where animals are filmed in their natural environment. There is an ethical argument concerning keeping animals in collections and whether there is a need for such.

Conservation Biology

Year of study 2
Code C17
Credits 15
Core/option Core

Please contact the course manager for details of this module.

Placement year

Year of study 3
Core/option Core

Read our dedicated [Placement Learning](#) pages for information on the many benefits of the placement year.

Honours Research Project

Year of study 4
Code HRPROJ
Credits 30
Core/option Core

To qualify for an honours degree a student must demonstrate the capacity for sustained, independent and high quality work. One of the most important vehicles for the demonstration of this capacity, and for developing the necessary skills, is the individual Honours Research Project. Each student will therefore be required to complete such a project under the general supervision of a member of staff and present the results in a project report and in a *viva voce* exam, with two tutors, which will also test to a high level, skills of communication and rational argument. This major exercise represents one-quarter of the final year studies and will therefore have an important influence on the classification of award.

Geographical Information Systems and Land Use

Year of study 4
Code C6009C17
Credits 15
Core/option Core
Module contact [Dr Andy Wilcox](#)

Land management is a complex process involving a combination of agricultural, environmental, recreational and social issues. Geographical Information Systems (GIS) allow storage, analysis and dissemination of spatial information are an essential tool for resource management. This module will provide students with an overview of GIS theory, application and software and allow students to develop practical skills relating to spatial data capture, analysis and presentation using the ESRI ArcGIS platforms.

Environment and Geography Field Course

Year of study 4
Code C6007C17
Credits 15
Core/option Core
Module contact [Dr Andy Wilcox](#)

Sustainable solutions to environmental problems are often complex and require a combination of different disciplines in order to achieve an acceptable outcome. Typically, such activities are carried out by a single project team or collection of project teams that each offer their own area of expertise to the solution. This module allows students to develop their high level skills and abilities by undertaking a team project based on a real situation or issue. The project will be focused around a residential field course and combine elements of the entire CEWG portfolio, including aspects of countryside, environmental and geographical management.

Management of Captive Aquatic Systems

Year of study 4
Code C17
Credits 15
Core/option Core
Module contact [Dr Tharangani Herath](#)

Please contact the course manager for details of this module.

Applied Companion Animal Health, Welfare and Behaviour

Year of study 4
Code A6007C17
Credits 15
Core/option Core
Module contact [Mr Stephen Baugh](#)

An integrated understanding of companion animal health, welfare and behaviour is essential for the development of companion animal management programmes that ensure optimum welfare.

This module is designed to provide a detailed knowledge of the factors involved in the aetiology and development of common diseases seen in companion animals (cats, dogs, small mammals, birds and reptiles) and develops the skills required to recognise signs of ill health in animals and to develop disease control and prevention strategies.

The behaviour of companion animal species will be considered, how health can influence behaviour, why certain behaviours may be suppressed in domestic settings and how this may lead to the development of pathology and inappropriate or abnormal behaviours. The prevention and control of behavioural problems will also be considered.

Aspects of animal physiology, nutrition, health and general husbandry introduced in earlier modules will form an essential background for this module.

Population and Community Ecology

Year of study 4
Code C17
Credits 15
Core/option Core

Please contact the course manager for details of this module.

International Perspectives on the Management of Animal Populations

Year of study 4
Code C6010C17
Credits 15
Core/option Core
Module contact [Dr Nicola Randall](#)

This module aims to enable students to use evidence-based research to inform management decision making for animal populations. Through their behaviour, organisms establish their place in the environment and their relationship with other species. Success is also affected by human induced factors such as habitat loss and fragmentation, introduced/invasive species, climate change and overharvesting.

This module will build on the animal behaviour concepts studied in levels 4 and 5, and how behavioural strategies and adaptations of different species combine with external factors to influence their fitness and survival. The module will consider how an understanding of behaviour can aid wildlife management with particular reference to one or more species of concern.