



BSc (Hons) Zoology with Entomology (with placement)

UCAS code	Z002
Institution code	H12
Duration	4 years (full-time) including a one-year work placement. A three year programme is available for applicants with at least two years, full-time relevant work experience.
Start date	September 2027
Location	Harper Adams University campus (and location of work placement)

BSc (Hons) Zoology with Entomology will allow you to study structure, classification, behaviour, health and nutrition and conservation of a wide range of animal species, with a focus in insects and other invertebrates.

Through the programme you will gain specialist knowledge and skills in ecology, physiology, genetics, evolution, taxonomy and behaviour using the diversity of invertebrate and vertebrate species as a focus. The programme recognises the importance of an understanding of both scientific principles and the socio-economic context to enable an intelligent application of policies, technologies, and management systems appropriate to wild, zoo, domestic, and agricultural animals, in the UK and internationally. Attention is given to specific strategies and key skills such as those emerging with respect to wildlife conservation, climate change adaptation and mitigation, disease and pest control, managing fisheries, improving livestock including through genetic modification, animal welfare on farms and in zoos, and the national and international legislation underpinning these subjects. As an Entomologist you will develop a broad knowledge of invertebrate species and be able to apply a range of skills to solve practical problems and to undertake a wide variety of career opportunities.

Through a range of teaching and learning methods including tutorials, laboratory and field classes, and residential field courses you will develop your key skills including field surveying, species identification, sampling procedures, data analysis and research methods. Opportunities to investigate the use of technologies in the studies of animals, including Geographical Information Systems and eDNA, will be explored. As a graduate, you will possess practical skills in laboratory and field techniques, project management, data handling, analysis, and report writing, as well as the ability to engage in further study and postgraduate research. Finally, recognising the importance of the effective communication of scientific and related material to a wider audience of planners, policymakers and the general public, you will acquire skills in report writing, oral presentations and critical and analytical thinking.

A core first year, shared between Applied Zoology, Zoology with Entomology, and Zoology with Environmental Management allows students the freedom to transfer between these three course areas during their first year, once they have experienced some of the learning opportunities at Harper Adams University. You will put into context your learning through the opportunity to select species to focus their studies on in a number of their modules throughout the programme. In Year 2 you will start to study your specialisations, allowing for further contextualization. Your integrated placement year in Year 3 of the programme allows you to put into practice what you have learnt, and to develop both specialist and core skills that will increase your employability as well as feeding into your final year of study. During the final year, you will explore your specialisation further and will undertake original research as part of your Honours Research Project.

A-level entry requirements

- **Entry requirements for 2027 entry are not currently available. Please contact Admissions for advice**

Work Placement

Challenge yourself in a real workplace during your placement year, which takes place between your second and fourth years at uni. Having chosen to specialise in entomology, this is your chance to learn from those already working in this exciting field, whether you pursue work with an organisation such as the Natural History Museum or Butterfly World, a lab-based role, or exploring agricultural pest management. Or maybe you'll take the opportunity to work with species you won't find at Harper such as zoo animals. You might work for Chester Zoo, for example, or the Durrell Wildlife Conservation. Whatever you choose, our placement team will support you both before and during your placement.

Careers

Entomologists are sought after and can choose from a range of interesting and rewarding careers. Some zoologists/entomologists may themselves controlling pests to make agriculture more sustainable and environmentally friendly, or to protect public health or forestry. Some graduates continue their studies to become research scientists, work as environmental consultants or nature conservationists, or in insecticide and drug development and sales. You could become a field trials officer, work in animal welfare and education, develop policies and regulations, or even find a role in the growing field of forensic entomology, using your knowledge of insect life cycles to help police solve crimes.

What will I study?

Year 1	Year 2	Year 3	Year 4
Vertebrate Biology (C4010HF) 20	Ecosystems and Conservation Biology - including Field Course (C5029HF) 20	Placement year	Honours Research Dissertation (HFZ) 40
Invertebrate Biology (C4011HF) 20	Biochemistry, Biotechnology and Genetics (HF) 20		Recent Advances in Zoological Sciences (HF) 20
Ecology, Biodiversity and the Natural Environment (C4012HF) 20	Animal Behaviour and Behavioural Ecology (A5026HF) 20		Zoology Field Course (including International Option) (HF) 20
Animal Health and Nutrition (C4013HF) 20	Invertebrate Ecology and Evolution (C5010HF) 20		Invertebrates and Humans (HF) 20
Key Skills in Zoology (C4014HF) 10	Professional Skills for Zoologists (C5014HF) 10		Advanced Methods in Entomology (HF) 20
Welfare, Ethics, Law and Policy (C4015HF) 20	Invertebrates in a Changing World (C5011HF) 20		
Field Skills and Field Course (C4016HF) 10	Electives		
	Sustainability in Practice (C5015HF) 10		

Vertebrate Biology

Year of study 1
Code C4010HF
Credits 20
Core/option Core
Module contact [Dr Julia Casperd](#)

This module will enable students to appreciate the diversity of vertebrates across many regions and continents and the significant role they play in ecosystem form and function. This diverse group is an ecologically important component of all life on earth and contributes in one form or another to the majority of biodiversity and can be found in virtually every ecosystem.

Vertebrates can be subdivided into five major groups: fishes, amphibians, reptiles, birds, and mammals. Each of these groups will be studied in the context of their taxonomic diversity, distribution, biology and evolutionary development. Vertebrates all share specific traits which will be investigated, enabling students to gain an understanding of vertebrate diversity and conservation. Focal case studies will be applied throughout the module to enable you to investigate species within these groups in higher detail.

Invertebrate Biology

Year of study 1
Code C4011HF
Credits 20
Core/option Core

There are around 1.25 million known invertebrate species with potentially millions more awaiting description. As many as 97% of all animals are invertebrates, and they are vital components of terrestrial and aquatic ecosystems. It is, therefore, essential that those working in the fields of zoology and entomology have a working knowledge of the biology and systematics of the major invertebrate groups.

A brief outline will be provided of taxonomy and systematics, including nomenclature and species concepts, that will set the foundation for the module. The course will introduce theoretical knowledge of invertebrate biology alongside the practical tools used for species identification of major groups. Aspects of phylogenetics will be discussed with evolutionary biology presented in the context of major taxa. It will also highlight the crucial functional role that invertebrates play in maintaining healthy ecosystems.

Ecology, Biodiversity and the Natural Environment

Year of study 1
Code C4012HF
Credits 20
Core/option Core

Students will be introduced to the science of applied field ecology and will examine the diversity of life. This module will focus on the key principles, practices and concepts in biodiversity and ecology and will cover key ecological concepts about the factors controlling the evolution, abundance, diversity and distribution of species within ecosystems and will examine the interactions between organisms and a wide range of habitats.

The variety and nature of soils in the UK and how these affect the land quality, flora and fauna will be considered along with climate change and its impact on the natural environment.

Animal Health and Nutrition

Year of study 1
Code C4013HF
Credits 20
Core/option Core

This module develops students' knowledge and understanding of the main nutritional requirements of a range of animal species, and the micro-organisms and parasites that are important in animal health. It also discusses the ways that animals defend themselves against invasions of foreign organisms. Main disease-causing agent will be studied, immune and other responses discussed, and both treatment and prevention of disease will be studied. The similarities and differences in nutrient requirements, and in the digestive system structures of a range of species will be investigated. Through laboratory tutorials, students will also develop their laboratory techniques and skills, which they will then put into practice in later modules on their courses.

Key Skills in Zoology

Year of study 1
Code C4014HF
Credits 10
Core/option Core

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Welfare, Ethics, Law and Policy

Year of study 1
Code C4015HF
Credits 20
Core/option Core

This module provides an introduction to a range of industries which involve animals and the implications of those industries within a variety of settings on a national and an international scale. It will consider the ethics of societies' usage of different types of animals and the role of legislation, policy 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 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.

During the module, you will also be introduced to the concept of animal welfare, legislation within industries, local, national and international policy in relation to animal welfare and welfare implications for animals. The content of this module will be of benefit to anyone considering working either directly or indirectly with animals in a range of environments. This module will equip you with underpinning knowledge which will support you throughout your degrees.

Field Skills and Field Course

Year of study 1
Code C4016HF
Credits 10
Core/option Core

This module introduces students to the practicalities of surveying of a range of habitats and taxonomic groups. Students will add to the practical competencies gained in other modules during the academic year and will experience further hands-on training in the main components of applied contemporary field/survey design and techniques including the use of indirect census techniques such as radiotracking in the capturing of relevant data. This module will address the effective management and mitigation of risk associated with fieldwork and the analysis and interpretation of simple data sets. This field course will embed students' knowledge of research methods, and provide a robust understanding of the application of simple parametric and non-parametric statistics in the evidencing of their scientific arguments.

Ecosystems and Conservation Biology - including Field Course

Year of study 2
Code C5029HF
Credits 20
Core/option Core

It is widely acknowledged that the conservation of species and ecosystems has become increasingly difficult because anthropogenic impacts are rapidly changing. This module is designed to develop the appropriate skills and underpinning knowledge concerned with the science of conservation biology and provides a firm grounding of the current threats to ecosystems, biodiversity loss and the strategies that conservation biologists use for management, and protection of vulnerable species and their associated ecosystems. Local, national and international examples will be used to underpin key concepts and practices.

Sustainability in Practice

Year of study 2
Code C5015HF
Credits 10
Core/option Core

Sustainable development requires a balance between the effective protection of the environment whilst also embracing economic and socioethical sustainability. Although some approaches to sustainability are

universal, others are more sector-focused, and this module will encourage a focus on what is done in a variety of diverse sectors from across the globe.

Addressing sustainability requires both scientific and technical supporting information and also careful and dynamic planning. Within this module, students will explore different approaches that are being taken to address sustainability issues, and will also develop their own sustainability action plans for sectors they are particularly interested in.

This module is a stand-alone, elective, introduction to the principles and practices relating to sustainability, with explicit reference to the three pillars of sustainable development. Through the use of discussions and debates, students will be encouraged to respect the point of view of others and to question their own views relating to sustainability.

Biochemistry, Biotechnology and Genetics

Year of study 2
Code HF
Credits 20
Core/option Core

This module develops the principles of animal biochemistry, breeding, genetics and biotechnology. It covers key anabolic and catabolic biochemical pathways and the application of biotechnology technologies in a range of animal settings. The key principles of genetic inheritance and breeding will also be covered. The module will complement learning at the molecular, physiological and species level, as well as highlighting the importance of biotechnology and breeding in the conservation of species and in many animal industries.

Animal Behaviour and Behavioural Ecology

Year of study 2
Code A5026HF
Credits 20
Core/option Core
Module contact [Dr Julia Casperd](#)

Their complex behaviour is one of the main factors that distinguish 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. 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.

Throughout this module, students will learn the key principles behind animal behaviour, including how animals perceive and respond to their environments, and understand how behaviour is adapted to enhance animal survival. You will then consider how to apply knowledge of animal behaviour in management contexts, covering the principles and methods of quantitative studies of animal behaviour. Knowledge of factors affecting animal behaviour and an understanding of the rationale behind presented behaviour is integral for applied animal scientists. In the latter half of this module, you will be introduced to a suite of methods which can be used to assess animal behaviour, including using novel technologies.

Invertebrate Ecology and Evolution

Year of study 2
Code C5010HF
Credits 20
Core/option Core

Invertebrates dominate terrestrial ecosystems and wild populations underpin much of the functionality needed for the persistence of life on earth. Invertebrates are intrinsically fascinating and complex models that have provided inspiration for fundamental eco-evolutionary theory. This inspiration has filtered through to all aspects of modern life (for example, the Darwin-Wallace theory of evolution was formulated

largely through adventures in entomology). Many of the most outstanding questions in ecology and evolution have, and will, be answered using invertebrates. For example, hexapod arthropods provide tractable laboratory subjects and have played a central role in modern evolutionary synthesis. Insects are also a diverse and successful group that displays a huge variation in life history strategies (for example, in overwintering, reproduction, feeding preference and dispersal).

This module will be considerate of scale, seeking to explain patterns through the process, building up from localised within-population dynamics towards global macroevolutionary diversity. Theory will be blended with practice and application so that students will be taught about natural selection alongside the development of pesticide resistance, for example. There will be an emphasis on the evolutionary ecology of life-history strategies and key adaptations of insects. The module will embed examples within existing eco-evolutionary theory as we scale up from population and behavioural to community ecology.

Ecology and evolution are quantitative disciplines that sit within the wider context of modern scientific inquiry. The module will be peppered with opportunities to learn and reinforce quantitative statistical analysis and modelling in R. Central to this is the use of molecular tools and phylogenetic trees for understanding current and historical context and an ability to conduct common ecological analyses such as null models and basic multivariate analyses.

Professional Skills for Zoologists

Year of study 2
Code C5014HF
Credits 10
Core/option Core

This module encourages you to identify the skills and requirements required to obtain and retain employment, both for the placement period and for post-university careers.

You will design and develop your CV, letters of application and both core skill and zoology-related skill development plans. You will also explore the different ways to find what jobs are available, investigate alternative and speculative approaches for obtaining employment, and how to find out more information on jobs before you apply for them, and before interviews.

You will also look at the challenges that you may face when in employment and identify different practical ways that you can use to address these challenges.

Invertebrates in a Changing World

Year of study 2
Code C5011HF
Credits 20
Core/option Core

Insects, the most diverse and abundant group of animals on Earth, play a critical role in maintaining ecosystem services that are essential for human well-being. However, in the Anthropocene – an era characterised by significant human influence on the environment - insect populations and ecosystems are facing unprecedented challenges. This module delves into the impact of a changing world on insects and their role in ecosystems, providing a comprehensive understanding of the current state of insects and their challenges.

The module begins by exploring the ecological and physiological responses of insects to key drivers of global change, including climate change, habitat fragmentation, and pollution. Students learn how these factors affect the behaviour, physiology, distribution, and abundance of insects, and how these changes, in turn, impact their interactions with other species. For example, warmer temperatures may alter the timing of insect life cycles, disrupt pollination networks, and affect insect-plant interactions, with cascading effects on ecosystem dynamics.

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 Dissertation

Year of study 4
Code HFZ
Credits 40
Core/option Core
Module contact [Professor Andy Wilcox](#)

The Honours Research Dissertation allows students to consolidate and utilise learning from their taught modules in the design, implementation, and reporting of an original research project in an aspect of their degree subject area that is of interest to them, appropriate to their area of study, and that will be of use to them in their learning and career development. The student will select a topic area and will, in conjunction with a supervisor, design, carry out, analyse, and present their research. This module develops a student's research skills and puts them at the centre of their own learning and development. Within this module, the student will undertake research study design, but also will evaluate the ethical and health and safety aspects of their project, and will design knowledge transfer for the dissemination of their research proposal and findings.

An honours degree involves the development of a learner to the point where they become an independent researcher, and as such, Honours Research Dissertation is the 'jewel in the crown' of an Honours Degree. The skills, resilience and independence developed during this module will be directly applicable to skills that a student will utilise, both in their career and in any further study they undertake.

Recent Advances in Zoological Sciences

Year of study 4
Code HF
Credits 20
Core/option Core

This module is designed to develop the ability of students to critically analyse current zoological research. Cell biology, physiology, animal interaction with man, and ecology will all be discussed, and current trends in global research discussed.

This module will build on knowledge gained in previous years of study and put zoological research into an applied context that forms a strong theme of the Zoology courses.

The learning associated with the module will be achieved through keynote lectures both from university staff and visiting speakers, but also through student-presented seminars on research topics appropriate to their route of study. These seminars will underpin the summative aspects of this module.

Zoology Field Course (including International Option)

Year of study 4
Code HF
Credits 20
Core/option Core

In light of the urgent need to halt the decline of biodiversity, it is increasingly important to understand the mechanisms involved in the conservation of species of flora and fauna and the synergy with One Health and sustainable development. The relationship animals have with their natural environment is seen as a key driver in the lifetime reproductive success and the ultimate survival of a species. This relationship is influenced by many factors, anthropogenic and natural in origin. This international zoology field trip will provide students with the opportunity to explore the biodiversity of different habitats, the behavioral

ecology of wildlife and research questions relating to current issues in conservation. It will allow them to contextualize the management of animal populations and the associated drivers and barriers to conservation on a global scale.

Students will gain field skills, and experience of industry best practices, and use evidence-based research to inform decision-making regarding the sustainable management of animal populations. The module will consider how an understanding of behaviour can aid wildlife management for conservation with particular reference to one or more species of concern.

Invertebrates and Humans

Year of study 4
Code HF
Credits 20
Core/option Core

Humans and invertebrates have co-existed for millennia but over this time they have developed a complex relationship characterised by positive and negative interactions. Invertebrates are the most abundant and diverse group of animals on the planet, playing vital roles in ecological processes such as pollination, decomposition, and pest control. They are also a crucial food source for many cultures globally and significantly contribute to global food security.

Studying invertebrates has been instrumental in advancing our fundamental understanding of biology, genetics, and ecology in recent decades. Invertebrates, particularly insects, have been widely used as model organisms to investigate various biological phenomena, from the genetics of behaviour and physiology to the mechanisms of disease transmission. Numerous invertebrate species have also been exploited to develop new 'bio-inspired' technologies and have permeated human culture to inspire art, literature, and folklore. However, the relationship between invertebrates and humans is not always positive as numerous species vector diseases and cause significant economic damage to agricultural crops and infrastructure globally.

Advanced Methods in Entomology

Year of study 4
Code HF
Credits 20
Core/option Core

Entomology is a rapidly evolving scientific field and has seen revolutionary advances in data collection as we move into the age of multi-omics and big data. While data sets have become more complex, some things remain constant: the next generation of entomologists need a broad theoretical underpinning and understanding of basic experimental design and an ability to embrace emerging technologies. By engaging with this module, students will gain theoretical and practical experience in advanced entomological techniques across molecular, chemical, and behavioural disciplines. Students will be encouraged to consider the broader interdisciplinary implications of these methods, considering how they may be applied within ecological entomology, agriculture, public health, and conservation.

This module builds on basic skills taught at Levels 4 and 5 (for example, collecting and curation of insects) and emphasises the importance of inquiry-driven research through the development of experimental design and analysis skills. Students will be taught both classical and emerging techniques in entomology (for example, olfactometry and analysis of genomic data) to provide students with a comprehensive skillset for post-graduation employment.