Click Here

Course summaryModern zoology is interdisciplinary and this course will enable you to learn the depth and breadth of animal biology, from the molecular to the ecological. Our zoology degree begins broadly and introduces more choice in years two and three.You will have the freedom to tailor your course to your interests and to specialise or maintain breadth in your studies. Opportunities include a week-long field- or laboratory-based course selected from a range of subject areas and a practical research project. The range of research and transferable skills you will learn will enhance your employability as a graduate.We have outstanding facilities in our state-of-the-art Life Sciences Building and the School of Biological Sciences has a world-class reputation for animal behaviour research. Many of our lecturers are world-leading researchers in animal behaviour and sensory biology and lead internationally recognised field studies on wild animal populations. Zoology is the scientific understanding of the diverse world of animals, providing an exploration of their behaviour, physiology, and ecological roles. Graduates in zoology find themselves well-equipped for a range of rewarding careers, including wildlife biologist, conservationist, zookeeper, or marine biologist. As well as working directly with animals, there are also opportunities in research, environmental consulting, and policy development. Zoology allows for specialisation in areas such as animal behaviour, ecology, or genetics, developing a versatile skill set that aligns with the growing demand for expertise in biodiversity conservation and sustainable resource management. With the global emphasis on wildlife preservation, studying zoology not only opens doors to rewarding work but also the chance to champion our planet's rich biological heritage. The impact you could make Be involved in the development of policies and regulations related to wildlife conservation, land management, and environmental protection. Contribute to scientific advancements that lead to discoveries about animal behaviour. Implement strategies for the recovery of threatened or injured animals. Extinction and evolution The psychology of primates Laboratory skills Genes and cellular control Marine biology Animal behaviour Disease, immunity, and parasites Patterns of life and evolution Chat to a current zoology student using UniBuddy. Some conversation starters for you: Ask which modules they really enjoyed. Find out how easy it was for them to make friends on their course. Do they have any tips on your personal statement? Did they do anything to prep for uni before they went? Are there books, podcasts or YouTube channels they would recommend? Zoology and Animal Studies I wasn't always sure which direction I wanted to take. My background was in biomedical science with the NHS. Leaving this behind to travel in my 20s changed this trajectory and inspired me to study Zoology. Meeting incredible scientists and visiting conservation projects sparked a passion for the natural world and its protection. This experience led me to pursue a degree in zoology as a mature student. I have learned about the delicate balance in ecosystems and the pressing need for conservation efforts. I am hoping to build a career in this field. I am passionate about making a difference for our planet and inspiring others to connect with and protect the natural world. Chat with Uma I am a third year Zoology BSc (hons) student at the University of Lincoln. I love all animals, my favourites being orcas! I am extremely passionate about diving, ocean conservation and travelling. I also love dance, horse riding, and kayaking as well as literally anything that involves water! I applied to the University of Lincoln through clearing in 2022 and would be more than happy to chat through any questions that you might have :) Chat with Kiannah-Jade Hi, I'm Sian, and I moved to Bangor to study Zoology and I have thoroughly enjoyed my 3 years here, and though I was unsure about moving to Bangor, it has been the best decision of my life. I have met so many interesting people and made some core friends for my life. I love playing in the Uni music society, as well as going to the wonderful beaches on Anglessy and occasionally go hiking! Chat with Sian At the moment I'm really enjoying looking at animal behaviour and ecology but am really looking forward to my upcoming trip to Canada with my course as I can get to do hands on research in Algonquin park. Other than my studies my favourite things to do are exploring Bangor with my friends and finding the best pubs for quizzes, karaoke and the cheapest drinks. Chat with Natasha Hi, I'm Dimithra Dayaratne, an undergraduate student studying Zoology with Conservation. I grew up in Sri Lanka. My goal in life is to become a chief sustainability officer, as I am passionate in environmental management. I know the struggles some of you guys might face. Leaving your friends and family probably for the first time, trying to fit in with your peers, or things like setting up your new bank account. International students in particular might struggle with some aspects like the culture shock or having no relatives in the country. I strive to ensure that everyone has a smooth and easy transition to their new chapter in life. Chat with Dimithra I studied music for two years in Leeds before coming to Bangor to do a foundation degree so that I could get on the zoology course here. I hope to travel the world and gain experience and skills in conservation, ecology, photography and many other sectors. Chat with Nicolas As I'm currently studying Zoology with Herpetology, I'm really into reptiles and amphibians (that's the herpetology). My hopes are to go and do animal conservation and research in amazing places like South Africa, Australia, and the US. I'm especially interested in toxicology of reptile venom, and amphibian disease. Chat with Star I'm hoping to have a career in animal conservation after graduation. I moved to Edinburgh around 3 and a half years ago, but I'm originally from the South of England Chat with Hannah Zoology and Animal Studies Hi! I'm Caitlin, a 4th Year commuting Zoology MSci student at the University of Sussex. I would be happy to answer all your questions about the university including accommodation, my course or student life. I respond to messages during the day and will get back to you as soon as I am available - hope to hear from you soon! Chat with Caitlin Hi, my name is Aimée and I come from Switzerland. I am a third year Zoology student with an interest genetics, and using it to conserve the species of our planet. I chose to study at Lancaster after falling in love with the campus on an open day. I am currently on my placement year working in the Royal Zoological Society of Scotland's WildGenes genetics laboratory. At university one of my favourite things to do is discover new coffee shops around Lancaster with my friends. Besides this I can usually be found in Waterstones buying yet another book or at home playing my latest Nintendo Switch obsession! Chat with Aimée Olivia Start your search now Get your UCAS Hub Your place to discover your options and research your future. Sign up today Second year zoology student, Aberystwyth University Next year I'll start my year in industry and I will be going to Borneo to work in a field centre. Hard skills you'll develop Fieldwork methods, including capturing, handling, and studying animals in their natural habitats Learn laboratory procedures for studying animal specimens Develop and use ecological models to simulate and predict ecosystem processes Understanding of animal physiology Soft skills you'll develop Observational skills Environmental awareness Persistence and patience Empathy and compassion Find out more about your career prospects from studying zoology. The following information is based on a typical conservation professional role. A nature reserve warden is in charge of our protected areas. With a deep passion for conservation, they oversee the ecological balance within the reserve, ensuring the health of habitats and the preservation of diverse wildlife species. Their role varies, from monitoring wildlife populations and managing habitats to educating visitors about the importance of conservation. Balancing between human recreation and environmental preservation, nature reserve wardens enforce regulations, maintain infrastructure, and encourage community engagement. Their commitment extends to emergency response and collaboration with researchers, contributing to a holistic approach in safeguarding the beauty and biodiversity of our precious natural spaces, whether close to home or abroad. Take our careers quiz to find your ideal job matched to your personality type. Find out more about what you'll need to study zoology at university or as an apprenticeship. Average requirements for undergraduate degrees Entry requirements differ between university and course, but this should give you a guide to what is usually expected from zoology applicants. Check out our industry guide to help you decide if an apprenticeship might be the right choice for you. Apprenticeships don't follow the same deadlines as applying to uni, the deadline is down to the employer. You apply directly through the employer. You're not restricted to one apprenticeship application; you can do as many as you like. There's nothing stopping you applying to university through UCAS, while also applying for apprenticeship vacancies. Check out live apprenticeship vacancies. Go deeper into topics around zoology with the following: Find out more about ZSL's Institute of Zoology's conservation work, from restoring ecosystems to protecting critical species. Watch this inspirational playlist of TED Talks, featuring experts across sustainability, climate change, resources, and the interaction between humans and our habitat. A documentary which tells in-depth stories of incredible animals, featuring award-winning photography in some of the most extraordinary places in the world. Application advice Whether it's personal statement tips or what to write in a cover letter for an apprenticeship application, our advice will help you get ahead in your zoology journey. Skills, experiences, and interests to mention Highlight any experiences that demonstrate your keen observation skills, such as observing animal behaviour in the wild, volunteering at a local zoo, or conducting independent wildlife studies. Do you have any research experience, whether in a formal academic setting or through personal projects? What specific aspects of zoology intrigue you and why are you drawn to studying it? Zoologists often need to convey complex scientific ideas, so talk about experiences that demonstrate your ability to communicate effectively. If you have any volunteer experience related to zoology, make sure you mention it. We asked admissions tutors to share their dos and don'ts for writing a strong and engaging personal statement. Here's what they told us. Personal statement builder Try our tool. Get help structuring your statement. Sign up today Zoology, or animal biology, is the field of biology that involves the study of animals. The word zoology comes from the Greek words zōion, meaning "animal", and logos, meaning "the study of". It encompasses all aspects of scientific knowledge about animals, like embryonic development, evolution, behavior, ecological distribution, and classification. Zoology is broken into many branches because there are so many different ways to study animals; it is also broken into branches based on which animals are being studied. History of Zoology People have been interested in learning about animals since ancient times. The prominent ancient Greek philosopher Aristotle took detailed notes on animal observations, and inspired other scientists for many hundreds of years. Many universities were founded in Europe in the 16th Century, and by the mid-17th Century, divisions were founded in universities that focused entirely on animal research. In the 19th Century, the microscope became commonplace in scientific research, and this opened up a whole new realm of possibility; now, the cells of animals could be studied at the microscopic level. Another breakthrough in zoology occurred when the naturalist Charles Darwin developed the theory of evolution by natural selection. This theory revolutionized zoology and taxonomy (classification). More recently, the discovery of DNA as life's genetic material led to even more new research and knowledge about the natural world and the evolutionary relationships between animals. Zoography, also called descriptive zoology or zoogeography, is the study of animals and their habitats. It is concerned with the geographic ranges of specific populations of animals, their effects on the ecosystems they live in, and the reasons for a specific spatial distribution of an animal species. Comparative anatomy is the study of similarities and differences in the anatomy of different types of animals. Closely related animals like mammals share common bones, even if these bones have been extremely modified in shape. For example, bat wings are essentially very long, thin bones that are homologous to the ones in human fingers. Studying the similar anatomical structures in related organisms provided evidence for evolution from a common ancestor that was later confirmed by genetics research. Comparative anatomy is still used today, often in paleontology, the study of fossils. Animal physiology is the study of the bodily processes that occur in animals that allow them to maintain homeostasis and survive. Homeostasis is the ability of the body to maintain a relatively constant equilibrium even in a changing environment. One example is the regulation of body temperature in mammals. Humans have a normal body temperature of about 37°C (98.6°F), even when the environment they are in is much colder. Animal physiology involves the study of processes like temperature regulation, blood pressure and blood flow, and the release of hormones at specific times in the body. Ethology is the study of animal behavior, usually in regard to in their natural environment as opposed to in a lab. Ethology has roots in the work of Darwin, but emerged as a field in the 1930s. It involves the study of animal learning, cognition, communication, and sexuality, and is related to evolutionary biology and ecology. Principles from ethology research are also used in animal training. Behavioral ecology emerged from ethology. It is the study of evolution as the basis for animal behavior due to ecological pressures, which are constraints placed upon organisms by their environment. Organisms with traits that are well-suited to their environment have a higher likelihood of surviving and reproducing than those who do not. When the proportion of individuals with favored traits increases over a long period of time, evolution can occur. Behavioral ecologists study animals' competition for resources such as food, territory, and mates and the increased reproductive success that certain traits may give. Zoology is also broken down into subcategories based on the type of animal being studied. For example, a distinction is made between invertebrate zoology and vertebrate zoology. There are also many specific terms for each type of animal that is studied. Some examples are: Mammalogy, the study of mammals. A popular type of mammalogy is primatology, the study of primates. Ornithology, the study of birds. Herpetology, the study of amphibians and reptiles. Ichthyology, the study of fish. Entomology, the study of insects. Entomology is itself broken down into many categories because there are so many types of insects. Some examples of its subcategories are Lepidopterology, the study of butterflies and moths, Myrmecology, the study of ants, and Coleopterology, the study of beetles. This is a picture of a coral reef. Coral reefs are full of biodiversity; many fish and other sea animals live on corals, which are also animals themselves. Many people are fascinated by animals, so zoology can be a rather competitive field. However, there are many different types of jobs in zoology. Many zoologists are researchers who study animals in lab and or/field settings. To be the head of a research lab, having a PhD is necessary. Another job in zoology is that of a wildlife rehabilitator, who cares for wild animals that are orphaned or injured in order to improve their health so that they can return to their natural habitat. Still other zoologists work in zoos as zookeepers and zoo curators, who take care of zoo animals, monitor their behavior, train them, and educate the public about the animals. Many zoologists also work in conservation, where they do research, collect information about endangered species, and educate people about these species. Entry-level jobs in zoology usually require a bachelor's degree and some experience working with animals, while more advanced positions may require a master's or doctorate. Some people go on to become zoologists after getting a bachelor's degree in biology or a related field. They combine a degree in biology with animal work, and may go on to get a master's or doctorate specifically in zoology. However, some colleges do offer bachelor's degrees specifically in zoology. Zoology bachelor's degree programs involve general classes in the basic sciences– biology, chemistry, physics, and math– and also involve upper-level classes on a variety of subjects, from animal science to microbiology to wildlife ecology. These classes meet the requirements for graduate studies in zoology; if someone who has not received a zoology bachelor's degree goes on to do graduate work in zoology, they must meet several basic requirements. Usually these requirements include, in addition to biology courses, at least three semesters of chemistry, a year of physics, and a year of calculus. All of these courses are usually taken in the process of getting a bachelor's degree in biology. If one has deficiencies, he or she may be able to make up for it by taking these courses before or while attending graduate school. References n.a. (n.d.) "Branches of Zoology." BioExplorer.net. Retrieved 2017-04-16 from . n.a. (n.d.) "Zoologist." North Carolina Association for Biomedical Research. Retrieved 2017-04-16 from . n.a. (2017). "A Brief History of Zoology.Actforlibraries.org. Retrieved 2017-04-16 from . Hardison, Ross C. (2003). "Comparative Genomics." PLoS Biol. 1(2): e58. Harper, Douglas (2017). "Zoology." Online Etymology Dictionary. Retrieved 2017-04-16 from . Kielmas, Maria (n.d.). "What Jobs Could a Zoologist Get?" The Houston Chronicle. Retrieved 2017-04-16 from . "Zoogeography." Merriam-Webster.com. Retrieved 2017-04-16 from . "Zoology." Merriam-Webster.com. Retrieved 2017-04-16 from . Learning in the field and lab, focusing on local and global zoology, you'll explore the form and function of animals, their adaptions to the environment, interaction, physiology and evolution. You'll examine animal behaviour from ants to primates and learn how to conduct surveys for a variety of animal populations. You'll be part of our Bioscience courses, which achieve a consistent high ranking in the UK for student experience and graduate prospects. From 2nd for student satisfaction in the Complete University Guide 2025, to 5th for teaching quality in The Times and Sunday Times Good University Guide 2025, to 11th for graduate careers in the Guardian University Guide 2025. The flexibility of our course means that after Year 1 you can maintain a broad interest in Zoology or specialise. You can also choose to switch degree entirely to our BSc Biology or BSc Wildlife Conservation Biology courses if you wish. You'll have the opportunity to progress from field training in the UK in Year 1 to field research overseas in Year 2 and field placements in Year 3, spanning the savannah of South Africa, the tropical rainforests of Costa Rica or mountains of Switzerland. With a focus on small class, practical and field learning, you will be assessed entirely through coursework to gain a truly representative measure of graduate attributes sought by future employers and for postgraduate study. Throughout, you'll be guided by lecturers awarded for their teaching excellence and media work, and internationally-recognised for their frontline conservation research in bioscience. To support your undergraduate journey, we also offer fee waivers, bursaries and awards, for both UK and international students. At the end of your degree, as a Gloucestershire graduate you can choose to pursue one of our postgraduate courses, receiving a priority offer and an alumni fees discount. Zoology, often referred to as the science of animals, is a branch of biology that delves into the intricate world of animal life. It explores their structure, behavior, evolution, ecology, and interactions with their environments. From microscopic organisms like protozoans to the majestic blue whale, zoology encompasses the vast diversity of the animal kingdom. This field not only satisfies our curiosity about the natural world but also plays a pivotal role in understanding ecosystems and addressing challenges like biodiversity conservation, climate change, and human-animal coexistence. In this blog, we will uncover the scope, branches, history, significance, and modern applications of zoology, offering an in-depth perspective that will captivate students, researchers, and enthusiasts alike. Zoology is a multidisciplinary field that integrates various biological sciences to study animals in their entirety. It spans: Taxonomy: Classifying and naming animals into hierarchical groups. Morphology: Examining the form and structure of animals. Physiology: Investigating how animal bodies function. Ecology: Understanding how animals interact with their environment. Ethology: Studying animal behavior. Evolutionary Biology: Exploring the origins and adaptations of animal species over time. Conservation Biology: Addressing the preservation of animal species and habitats. Each of these aspects contributes to a holistic understanding of the animal kingdom, enabling us to appreciate and protect the intricate web of life on Earth. Zoology has ancient roots, tracing back to early human societies where understanding animals was crucial for survival. Here is a brief timeline of zoological progress: The earliest depictions of animals are found in prehistoric cave paintings. Ancient Egyptians studied animals for religious and practical purposes, documenting their knowledge in hieroglyphs. Aristotle (384-322 BCE) is often regarded as the father of zoology. He meticulously documented over 500 species in his work, Historia Animalium. Zoological studies were largely stagnant, with knowledge preserved and interpreted through religious texts. The rediscovery of ancient texts and advances in anatomy fueled the resurgence of zoological studies. The 18th and 19th centuries witnessed the development of classification systems by scientists like Carl Linnaeus, who introduced binomial nomenclature. Charles Darwin's theory of evolution by natural selection revolutionized our understanding of animal diversity. The advent of molecular biology, genetics, and advanced imaging technologies has brought new insights into zoological research. Zoology's vast scope has led to the emergence of specialized branches. Here are some key areas: Focuses on classifying animals into hierarchical groups based on shared characteristics. Compares the structural features of different animals to understand evolutionary relationships. Studies the processes through which animals grow and develop from zygotes to adults. Examines animal behavior in natural settings, including migration, mating, and social interactions. Explores ancient animals through fossil records to reconstruct evolutionary histories. Focuses on insects, the most diverse group of animals on Earth. Investigates marine organisms and their ecosystems. Studies wild animals and their habitats to inform conservation efforts. Analyzes parasites and their interactions with hosts. Zoogeography: Examines the geographic distribution of animals and the factors influencing their locations Zoology is not merely an academic pursuit; it holds significant relevance in various domains: Biodiversity Conservation: Zoologists identify endangered species, study their habitats, and develop strategies to prevent extinction. Research on animals contributes to understanding diseases, developing vaccines, and testing medical treatments. Studies on pests, pollinators, and livestock improve agricultural productivity and sustainability. Zoologists assess the roles of animals in ecosystems to maintain ecological balance. Education and Public Awareness: Zoology inspires a sense of wonder and responsibility toward nature, fostering conservation efforts. Climate Change Mitigation: By studying animal responses to climate change, zoologists provide insights into ecosystem resilience and adaptability. Technological advancements have transformed zoological research. Key innovations include: DNA sequencing and genomics reveal genetic relationships among species. Satellite imagery and drones monitor wildlife populations and habitats. Analyzing large datasets to study animal genetics, behavior, and evolution. Telemetry and GPS Tracking: Tracking animal movements to understand migration and habitat use. Advanced microscopes enable the study of microscopic organisms and cellular structures. AI aids in identifying species, analyzing behavior patterns, and predicting ecological changes. Zoology offers diverse career opportunities for those passionate about animals and the environment. Common career paths include: Wildlife Biologist: Conducts field studies and monitors animal populations. Marine Biologist: Studies aquatic organisms and ecosystems. Conservationist: Works on preserving biodiversity and natural habitats. Zookeeper: Manages animal care in zoos and sanctuaries. Veterinarian: Provides medical care to animals. Academic Researcher: Investigates specific aspects of zoology and teaches at universities. Environmental Consultant: Advises on projects impacting wildlife and ecosystems. Science Communicator: Shares knowledge about animals through writing, media, or education. Photo by Enes Beydilli on Pexels.com The blue whale is the largest animal ever to exist, reaching lengths of over 100 feet. Octopuses have three hearts and blue blood. Honeybees perform a "waggle dance" to communicate the location of food. Some species of frogs can survive being frozen and return to normal once thawed. The axolotl, a type of salamander, can regenerate its limbs, heart, and spinal cord. Despite its advancements, zoology faces challenges: Habitat Loss: Urbanization and deforestation threaten species worldwide. Climate Change: Rapid changes in climate impact animal survival and migration patterns. Funding: Limited resources for research and conservation efforts. Illegal Wildlife Trade: Poaching and trafficking endanger countless species. Data Deficiency: Many species remain undiscovered or poorly studied. Addressing these challenges requires global collaboration, public awareness, and innovative solutions. As technology evolves, zoology is poised to uncover even deeper insights into the animal kingdom. Emerging trends include: Combining data from multiple disciplines to understand complex animal systems. Engaging the public in data collection and wildlife monitoring. Using biotechnology to address conservation challenges, such as de-extinction. Automating species identification and behavioral analysis. International initiatives to tackle biodiversity loss and climate change. Zoology is a fascinating and vital field that deepens our understanding of the natural world. It not only satisfies our intellectual curiosity but also equips us to tackle pressing global issues like biodiversity loss and environmental degradation. Whether you aspire to become a zoologist, support conservation efforts, or simply marvel at the wonders of nature, zoology offers endless opportunities to explore and protect the incredible diversity of life on Earth. Subscribe to get the latest posts sent to your email. zoology, branch of biology that studies the members of the animal kingdom and animal life in general. It includes both the inquiry into individual animals and their constituent parts, even to the molecular level, and the inquiry into animal populations, entire faunas, and the relationships of animals to each other, to plants, and to the nonliving environment. Though this wide range of studies results in some isolation of specialties within zoology, the conceptual integration in the contemporary study of living things that has occurred in recent years emphasizes the structural and functional unity of life rather than its diversity. Prehistoric man's survival as a hunter defined his relation to other animals, which were a source of food and danger. As man's cultural heritage developed, animals were variously incorporated into man's folklore and philosophical awareness as fellow living creatures. Domestication of animals forced man to take a systematic and measured view of animal life, especially after urbanization necessitated a constant and large supply of animal products. Study of animal life by the ancient Greeks became more rational, if not yet scientific, in the modern sense, after the cause of disease—until then thought to be demons—was postulated by Hippocrates to result from a lack of harmonious functioning of body parts. The systematic study of animals was encouraged by Aristotle's extensive descriptions of living things, his work reflecting the Greek concept of order in nature and attributing to nature an idealized rigidity. In Roman times Pliny brought together in 37 volumes a treatise, Historia naturalis, that was an encyclopaedic compilation of both myth and fact regarding celestial bodies, geography, animals and plants, metals, and stone. Volumes VII to XI concern zoology; volume VIII, which deals with the land animals, begins with the largest one, the elephant. Although Pliny's approach was naïve, his scholarly effort had a profound and lasting influence as an authoritative work. Zoology continued in the Aristotelian tradition for many centuries in the Mediterranean region and by the Middle Ages, in Europe, it had accumulated considerable folklore, superstition, and moral symbolisms, which were added to otherwise objective information about animals. Gradually, much of this misinformation was sifted out: naturalists became more critical as they compared directly observed animal life in Europe with that described in ancient texts. The use of the printing press in the 15th century made possible an accurate transmission of information. Moreover, mechanistic views of life processes (i.e., that physical processes depending on cause and effect can apply to animate forms) provided a hopeful method for analyzing animal functions; for example, the mechanics of hydraulic systems were part of William Harvey's argument for the circulation of the blood—although Harvey remained thoroughly Aristotelian in outlook. In the 18th century, zoology passed through reforms provided by both the system of nomenclature of Carolus Linnaeus and the comprehensive works on natural history by Georges-Louis Leclerc de Buffon; to these were added the contributions to comparative anatomy by Georges Cuvier in the early 19th century. Physiological functions, such as digestion, excretion, and respiration, were easily observed in many animals, though they were not as critically analyzed as was blood circulation. Following the introduction of the word cell in the 17th century and microscopic observation of these structures throughout the 18th century, the cell was incisively defined as the common structural unit of living things in 1839 by two Germans: Matthias Schleiden and Theodor Schwann. In the meanwhile, as the science of chemistry developed, it was inevitably extended to an analysis of animate systems. In the middle of the 18th century the French physicist René Antoine Ferchault de Réaumer demonstrated that the fermenting action of stomach juices is a chemical process. And in the mid-19th century the French physician and physiologist Claude Bernard drew upon both the cell theory and knowledge of chemistry to develop the concept of the stability of the internal bodily environment, now called homeostasis. The cell concept influenced many biological disciplines, including that of embryology, in which cells are important in determining the way in which a fertilized egg develops into a new organism. The unfolding of these events—called epigenesis by Harvey—was described by various workers, notably the German-trained comparative embryologist Karl von Baer, who was the first to observe a mammalian egg within an ovary. Another German-trained embryologist, Christian Heinrich Pander, introduced in 1817 the concept of germ, or primordial, tissue layers into embryology. In the latter part of the 19th century, improved microscopy and better staining techniques using aniline dyes, such as hematoxylin, provided further impetus to the study of internal cellular structure. By this time Darwin had made necessary a complete revision of man's view of nature with his theory that biological changes in species occur through the process of natural selection. The theory of evolution—that organisms are continuously evolving into highly adapted forms—required the rejection of the static view that all species are especially created and upset the Linnaean concept of species types. Darwin recognized that the principles of heredity must be known to understand how evolution works; but, even though the concept of hereditary factors had by then been formulated by Mendel, Darwin never heard of his work, which was essentially lost until its rediscovery in 1900. Genetics has developed in the 20th century and now is essential to many diverse biological disciplines. The discovery of the gene as a controlling hereditary factor for all forms of life has been a major accomplishment of modern biology. There has also emerged clearer understanding of the interaction of organisms with their environment. Such ecological studies help not only to show the interdependence of the three great groups of organisms—plants, as producers; animals, as consumers; and fungi and many bacteria, as decomposers—but they also provide information essential to man's control of the environment and, ultimately, to his survival on Earth. Closely related to this study of ecology are inquiries into animal behaviour, or ethology. Such studies are often cross disciplinary in that ecology, physiology, genetics, development, and evolution are combined as man attempts to understand why an organism behaves as it does. This approach now receives substantial attention because it seems to provide useful insight into man's biological heritage—that is, the historical origin of man from nonhuman forms. The emergence of animal biology has had two particular effects on classical zoology. First, and somewhat paradoxically, there has been a reduced emphasis on zoology as a distinct subject of scientific study; for example, workers think of themselves as geneticists, ecologists, or physiologists who study animal rather than plant material. They often choose a problem congenial to their intellectual tastes, regarding the organism used as important only to the extent that it provides favourable experimental material. Current emphasis is, therefore, slanted toward the solution of general biological problems; contemporary zoology thus is to a great extent the sum total of that work done by biologists pursuing research on animal material. Second, there is an increasing emphasis on a conceptual approach to the life sciences. This has resulted from the concepts that emerged in the late 19th and early 20th centuries: the cell theory; natural selection and evolution; the constancy of the internal environment; the basic similarity of genetic material in all living organisms; and the flow of matter and energy through ecosystems. The lives of microbes, plants, and animals now are approached using theoretical models as guides rather than by following the often restricted empiricism of earlier times. This is particularly true in molecular studies, in which the integration of biology with chemistry allows the techniques and quantitative emphases of the physical sciences to be used effectively to analyze living systems. At Swansea, you will benefit from a high-quality, research-informed education that combines a range of effective and inclusive teaching methods, carefully tailored to suit the needs of your course. Most courses are taught in person, on campus, giving you the opportunity to actively engage with other students, academic staff, and the wider university community. You can expect a mix of lectures, seminars, workshops, and practical sessions - including laboratory work, skills training, or studio-based teaching where relevant to your discipline. These sessions are designed to encourage active participation, collaboration, and the development of both subject-specific and transferable skills. Digital learning tools are also used to enhance your learning experience. These may include: Recorded lectures to support flexible study and revision. Virtual labs or simulated environments, particularly in science, healthcare, and technical disciplines. Online resources on the university's virtual learning environment (Canvas), including videos, reading materials, quizzes, and discussion forums. This approach enables you to engage with and review content at your own pace while benefiting from the structure and support of in-person teaching. This course may offer some modules taught through the medium of Welsh or bilingually for students who consider themselves to be fluent Welsh speakers. For more details on the provision available see the Welsh Provision expander below. N.B If you are an international student studying with a Student Route Visa, please note that your timetabled activity, along with any additional supervisory activity (with Swansea University staff present) will take place on campus. In line with UKVI protocol, these sessions will be monitored and data made available on request. Author: Dee Lawlor — Last update: 11 December 2024 Zoology is the branch of Biology dedicated to all aspects of animal life – from anatomy and physiology, to evolution and husbandry. It is a subject for those who love animals and those who want to understand how the natural world works. As our awareness of environmental issues grows, and as our governments shift their priorities towards protecting and conserving the environment and wildlife, so will Zoology be an increasingly worthwhile subject to study. What is Zoology? Zoology is the branch of Biology that studies the animal kingdom. In a Zoology degree, you will learn about animal life from every point of view – including (but not limited to) microbiology, genetics, evolution, conservation, biodiversity, behaviour, physiology, ecosystems, and husbandry.Zoology is often misunderstood as a subject. When you tell people that you are studying Zoology, many people will respond with "so you're going to work in a zoo?". And yes, if that is your chosen career path. But you are just as likely to be found running a natural history museum, managing land for conservation, digging up a woolly mammoth, or working in a lab using genetics to save a species from extinction. Where can I study Zoology? Zoology as a stand-alone degree programme exists at a number of universities in Europe, but it is very rare. Especially at the undergraduate level it is much more common to study e.g. Biology or Life Sciences, and cover Zoology via specific modules as part of the programme. At the postgraduate level, you will also often find specialised subjects such as Evolutionary Biology. Be sure to look not only for programmes with "Zoology" in the name, but cast your net a bit wider, especially if you want to study in English in a non-English speaking country. Universities that offer Bachelors in Zoology, or closely related subjects: Find Bachelors in Zoology Universities that offer Masters in Zoology, or closely related subjects: Stockholm University (Sweden) University of Helsinki (Finland) Find Masters in Zoology Photo by Diego Madrigal What can I expect to study in a Zoology Bachelor's programme? As with most science courses, in a Zoology Bachelors, you will start broad and narrow down your speciality as you go. In the first year, you can expect to study general biology (including microbiology) and chemistry, as well as some broad topics such as ecology and environmental science. After the first year you will study topics such as (but not limited to): Genetics, embryology Evolution, paleobiology Epigenetics, environmental physiology Animal husbandry, behaviour, enrichment Conservation, ecology, biodiversity Freshwater biology, marine biology Entomology, ornithology, herpetology, parasitology Ethics, experiment and research skills, data handling A Zoology BSc programme will typically last 3 to 4 years. Expect a mix of classroom learning, laboratory work and field work. Entry requirements will differ depending on the university, but you can expect to need passing grades in biology, maths, and a second science such as geography or chemistry. Keep in mind that not many universities offer programmes wholly dedicated to Zoology. You may have to study Biology and focus on Zoology through electives. Check the compulsory and optional modules to see how well they align with the subjects mentioned above. Find Bachelors in Zoology What can I expect to study in a Zoology Master's programme? At the Master's level you get the chance to specialise in a certain area of Zoology. Usually, your subject choice will align with courses that you chose during your Bachelor's. For example, a Master's programme on conservation or evolution will require you to have studied genetics throughout your undergrad. Postgraduate courses are usually one or two years long. Like at the undergraduate level, they usually consist of a mix of classroom, laboratory, and field work. Think carefully about the career you want to pursue: Your Masters will play an important role in it. If you plan to stay in academia, with a PhD as the next step, your Masters should also align with the field that you want to focus your research on. Admission requirements for a Zoology Master can vary. UK universities usually ask for an upper second-class Bachelor's degree (or "2.1") to qualify. Also, if it is a highly specialised programme, you may have to have a certain number of credit points in that specific field. Find Masters in Zoology What should I know about doing a PhD in Zoology? A PhD is the highest academic degree you can achieve, and it will require significant independent research work. If you are passionate about Zoology, and especially if you plan to pursue a career in academia, doing a PhD is something you should consider. As in other sciences, a Zoology PhD will usually last three to four years. Depending on your research project and your funding, it may also take longer to finish. Don't underestimate this effort - it's a very challenging undertaking! To be accepted as a doctorate student, most universities will require you to have an MSc in the field that you plan to focus on. Some universities may admit you with only a BSc if you have received very good grades. The best universities for Zoology in 2025 Many students like to use rankings to guide them when choosing a university. However, since Zoology as a separate degree programme is offered only by few institutions, don't make rankings your main decision driver. And because Zoology courses are relatively rare, there is also no specific ranking for them. The closest you can get is the Shanghai Subject Rankings for Biological Sciences and for Veterinary Sciences, both of which are closely related subject areas. Here is a selection of high-ranking European universities in those league tables: How to pick the right university for Zoology? Universities all have their unique strengths. If you already know what career path you want to pursue after graduating from your Zoology programme, try to pick a university that has connections to that.For example, if you want a career working in a natural history museum, then find universities that work closely with natural history museums or that have their own museum. If you want a career in animal husbandry, try to choose a university where there is a zoo, safari park or similar nearby.Your university will have connections that can help you get established. If you want to stay in academia, look at the postgraduate school and see what kinds of research the institution is known for, and what topics the current PhD students are working on. Photo by Mathias Appel How is studying Zoology different from Biology? Biology is the umbrella term for the scientific study of all living things. This includes animals, but also plants, fungi, and micro-organisms.Zoology is a branch of Biology, and is focused on animal life. This will include some microbiology (single-celled organisms) but is more focused on multi-cellular life (such as Daphnia and plankton), invertebrates (insects, molluscs, etc.), and fauna (birds, reptiles, mammals, etc.).Zoology curricula also include some botany, but this will be in the context of animals. For example, how certain species of plants and animals interact with each other. How is studying Zoology different from Animal Sciences? Zoology and Animal Sciences are closely related subjects, but focus on different things: While Zoology is concerned with all forms of animal life, Animal Sciences focuses on domesticated animals, specifically farm animals and pets. Animal Science is concerned with husbandry, breeding, health and well-being of such animals; and the discipline rather belongs to the Agriculture field, whereas Zoology is commonly classified as a Natural Science. Top reasons for studying Zoology Zoology is one of those subjects that you choose because you simply love it. Zoology students are some of the most passionate and energetic science students because they have been waiting for this opportunity their whole lives! Not convinced yet? Here are the main reasons that make Zoology a choice worth considering: You get to work with or study animals: People who choose to study zoology are nature lovers. If you love animals, a career in this field may be the most rewarding path for you. You can make a difference in the world: Countless species around the globe are at risk of extinction. Zoologists are on the front line of conservation and work to save those species and their habitats. They are also passionate about teaching others about the animal kingdom and the benefits of protecting the natural world. You get to travel: Zoology is not just for the animal-lover, it is for the adventurer. You could find yourself in some of the most unique and remote places on Earth to conduct your work. Career options for Zoology graduates There are a diverse range of careers and employers that will be interested in Zoology graduates. More and more, companies and government departments are dedicating resources to environmental causes. And thanks to efforts such as the EU Biodiversity Strategy for 2030 (details), Zoology graduates will be in growing demand as we, as a society, move towards a greener way of life. What kinds of employers hire Zoology graduates? Zoologists are needed at any organisation where animals play an important role. Typical employers include, but are not limited to: Zoos and wildlife parks NGOs and charities that focus on wildlife Government agencies and environmental protection agencies Animal nutrition manufacturers Museums Universities and research institutions Typical job titles and descriptions for Zoology graduates: Animal husbandry professional: Be an expert in caring for domesticated animals. Ensure their health and enrichment. Conservation officer: Manage and protect habitats to ensure their future. Conservation geneticist: Use genetics to determine the health of animal populations and design breeding programmes to ensure the future of a species. Paleobiologist: Study extinct animals, from the dinosaurs to the woolly mammoth to the thylacine. Field researcher: Travel the world, exploring the far reaches of habitats to discover and study species in their natural habitat. Documentary maker: Bring the animal kingdom into people's homes. Show and teach people about the natural world by producing & filming wildlife documentaries. Academic: Conduct your own research and teach the next generation of zoologists. Marine scientist: Specialise in ocean fauna. Protect whales, educate people about the true nature of sharks, or rebuild coral reefs. Environmental consultant: Perform audits of habitats for their health and wealth and advise on how to protect them. Environmental educator: Teach young people about nature and how they can protect it. The requirements for entry level jobs will vary, depending on the position. Other than a good final mark on your degree, your practical experience (work and volunteering) will be very valuable in securing you your first job. Does studying Zoology mean I'll work in a zoo? "Zoology" has "zoo" right in the name, yet that is just one of many career options for which your degree will qualify you. If you do want to work in a zoo, make sure to tailor your courses towards animal husbandry and behaviour. However, if you want to go in another direction, pick your university and your elective modules in line with that. If you want to work in conservation, then genetics, biodiversity, and ecology courses will be for you. If you want to be a palaeontologist, focus on anatomy and evolution. Zoology studies the animal kingdom from multiple different angles, so discuss your career goals with the university and they will help you tailor your course. What advice do you have for a Zoology student? Careers working with animals are highly competitive. There can be hundreds of applicants for each available position, and the people who get the jobs tend to stay in them. Therefore, start networking as early as possible. If you know the job that you eventually want, seek out relevant volunteering opportunities and summer jobs. This will not only help you build your experience but also your reputation. The zoological world is small, and a good reputation and strong network will be of huge benefit to you. Volunteering or working with animals involves a range of practical skills, as well as academic knowledge. So, any volunteering or work experience you can get will be very valuable As in all scientific disciplines, learn good lab skills! Learn to be confident and competent at basic skills such as how to correctly weigh and measure samples, preparing microscope slides, how to record and manage data properly, et cetera. It will make a huge difference to your zoological career. If you want to do field work, learning good "out on the ground" skills such as camping, hiking, and first aid are beneficial. If you want to work in animal husbandry (in a zoo or safari park for example), knowing how to use power tools is oddly useful, as you will want to be able to build habitats and enrichment. Zoology can take you to some remote places, so having a driver's license is a bonus. A word of warning about getting a BSc Zoology: The value and content of your degree may be misunderstood. People who are not from a Zoology background do not always know what is included in a typical curriculum. You might have studied every microbiology course available, but the person hiring for the graduate job in the laboratory will just see the word "zoo" and dismiss you as a professional koala cuddler. If you want more options in your science career, consider choosing Biology as your degree subject, and venture into Zoology via elective modules. What are similar subjects I could study? Zoology is a

understand how genetic information is expressed, regulated, and modified in various animal species. One of the most groundbreaking advancements in recent years has been the discovery and application of CRISPR-Cas9, a revolutionary gene editing tool that has transformed the landscape of genetic research. CRISPR-Cas9 is a gene-editing technology derived from the adaptive immune system of bacteria. With its two main components (the Cas9 enzyme and a guide RNA), the CRISPR-Cas9 system offers a novel approach to manipulate epigenetic markers, at specific gene loci in animal models, thus paving the way for the exploration of their role in various biological processes like development, aging, and disease. (Ref-17) Figure 13: An infographic showing the different age-related disorders that can be targeted using CRISPR-Cas9 technology. Image Credit: Allen Caobi (Ref-18) Methods In Zoology In zoology, researchers employ a wide range of laboratory methods to study various aspects of animals' biology, behavior, physiology, genetics, and ecology. Below are some common laboratory methods used in zoology. Laboratory Method Purpose Microscopy Examining cellular and subcellular structures DNA Sequencing Studying genetic diversity and evolution Immunohistochemistry Detecting specific proteins in animal tissues Behavioral Observations Studying animal behavior and responses Radio Telemetry Tracking animal movements in natural habitats Histology Examining tissue structure under a microscope Electrophysiology Studying electrical activity in tissues and organs ELISA Quantifying molecules in animal samples Gas Chromatography-Mass Spectrometry Analyzing organic compounds in animal samples Respirometry Measuring metabolic rates of animals X-ray and CT Scanning Studying skeletal structures and internal organs Bioacoustics Analyzing animal sounds and communication patterns Data Source: Dr. Harpreet Narang of Biology Online Applied Zoology Applied zoology is also known as zootechnics or animal biotechnology. It is a branch of zoology that focuses on the practical applications of animal biology to address real-world challenges. It involves the integration of various scientific disciplines to improve animal health, welfare, and productivity. From developing sustainable animal agriculture practices (domesticated animals/ domestic animals) to advancing biomedical research using animal models, applied zoology plays a crucial role in enhancing how humans and animals interact and also in mitigating environmental impacts. By harnessing cutting-edge technologies such as genomics, bioinformatics, and reproductive technologies, applied zoology offers innovative solutions for: Optimizing food production Conserving endangered species Promoting human and animal well-being Figure 14: Animal models are widely used to advance biomedical research. By employing carefully designed experiments on animals, scientists gain crucial insights into biological processes and test new medical interventions. This approach helps bridge the gap between basic research and clinical applications, ultimately improving human health outcomes. Image Credit: Foundation for Biomedical Research Moving Forwards: Zoology Career For students captivated by the mysteries of the biological world and animal behavior, a career in zoology offers an exciting journey. Zoology graduates or students with zoology majors are the frontrunners in wildlife conservation as they engage in the scientific study of different faunal life forms and their evolutionary history. Work: Armed with both communication skills and knowledge in life and physical sciences, developmental biology, and natural history, zoologists unravel the behavioral patterns and population genetics of diverse living systems. Future Work Prospects: As these professionals step into the field, they can collaborate with conservation groups and government agencies, working closely to protect the natural environment and the inhabitants it shelters. In their roles within the federal government and beyond, zoology graduates play an indispensable role in shaping policies, conducting groundbreaking research, and safeguarding our planet's biodiversity. Arena of Work: From individual animals to entire ecosystems in remote locations, zoologists assess the impact of human activities and devise strategies to ensure harmony between humans and animals. Zoologists explore animal shelters, research facilities, and fieldwork to grasp the intricacies of animal behavior and habitat dynamics. Requirements: Achieving a zoology career often begins with pursuing a Bachelor's degree, followed by specialized studies in a Master's degree program. Throughout this educational journey, hands-on practical experience is paramount. As they delve into the mysteries of the animal kingdom, zoologists are driven by the fundamental principles of cell theory and vital phenomena, unraveling the wonders of animals and plants alike. Embarking on this zoology career path, students passionate about the natural world find themselves at the forefront of conservation efforts, leaving an enduring impact on our planet's most fascinating creatures and ecosystems. © Take the Zoology – Biology Quiz! Further Reading Branches of biology Cryptozoology References Holt, B. G., Lessard, J. P., Borregaard, M. K., Fritz, S. A., Araújo, M. B., Dimitrov, D., ... & Rahbek, C. (2013). An update of Wallace's zoogeographic regions of the world. Science, 339(6115), 74-78. Santana, S. E. (2018). Comparative anatomy of bat jaw musculature via diffusible iodine-based contrast-enhanced computed tomography. The Anatomical Record, 301(2), 267-278. Orliac, M. J., & O'leary, M. A. (2014). Comparative anatomy of the petrosal bone of dichobunoids, early members of Artiodactylamorpha (Mammalia). Journal of Mammalian Evolution, 21, 299-320. Resnis, E., Gamberi, C., & Minnich, J. (2023). Skulls Tell Tales: Using 3D Printing and Medical Imaging to Enhance the Comparative Anatomy Lab Experience. Sharma, V., Hecker, N., Roscito, J. G., Foerster, L., Langer, B. E., & Hiller, M. (2018). A genomics approach reveals insights into the importance of gene losses for mammalian adaptations. Nature communications, 9(1), 1215. Mattucci, F., Galaverni, M., Lyons, L. A., Alves, P. C., Randi, E., Velli, E., ... & Caniglia, R. (2019). Genomic approaches to identify hybrids and estimate admixture times in European wildcat populations. Scientific Reports, 9(1), 11612. Lahoz-Monfort, J. J., & Magrath, M. J. (2021). A comprehensive overview of technologies for species and habitat monitoring and conservation. BioScience, 71(10), 1038-1062. Yoda, K. (2019). Advances in bio-logging techniques and their application to study navigation in wild seabirds. Advanced Robotics, 33(3-4), 108-117. Williams, H. M., & DeLeon, R. L. (2020). Deep learning analysis of nest camera video recordings reveals temperature-sensitive incubation behavior in the purple martin (Progne subis). Behavioral Ecology and Sociobiology, 74, 1-12. Tuia, D., Kellenberger, B., Beery, S., Costelloe, B. R., Zuffi, S., Risse, B., ... & Berger-Wolf, T. (2022). Perspectives in machine learning for wildlife conservation. Nature communications, 13(1), 792. Webber, Q. M., & Vander Wal, E. (2019). Trends and perspectives on the use of animal social network analysis in behavioural ecology: a bibliometric approach. Animal Behaviour, 149, 77-87. Karnowski, K., Ajduk, A., Wieloch, B., Tamborski, S., Krawiec, K., Wojtkowski, M., & Szkulmowski, M. (2017). Optical coherence microscopy as a novel, non-invasive method for the 4D live imaging of early mammalian embryos. Scientific reports, 7(1), 4165. Chung, Y. H., Hsiao, Y. H., Kao, W. L., Hsu, C. H., Yao, D. J., & Chen, C. (2015). Microwells support high-resolution time-lapse imaging and development of preimplanted mouse embryos. Biomicrofluidics, 9(2). Sharma, A., Ansari, A. Z., Kakulavarapu, R., Stensen, M. H., Riegler, M. A., & Hammer, H. L. (2023). Predicting Cell Cleavage Timings from Time-Lapse Videos of Human Embryos. Big Data and Cognitive Computing, 7(2), 91. Parmesan, C. (2006). Ecological and evolutionary responses to recent climate change. Annu. Rev. Ecol. Evol. Syst., 37, 637-669. Stanley G. D., Jr (2006). Ecology. Photosymbiosis and the evolution of modern coral reefs. Science (New York, N.Y.), 312(5775), 857–858. Brane, A. C., & Tollefsbol, T. O. (2019). Targeting telomeres and telomerase: studies in aging and disease utilizing CRISPR/Cas9 technology. Cells, 8(2), 186. Caobi, A., Dutta, R. K., Garbinski, L. D., Esteban-Lopez, M., Ceyhan, Y., Andre, M., ... & El-Hage, N. (2020). The Impact of CRISPR-Cas9 on age-related disorders: from pathology to therapy. Aging and disease, 11(4), 895.