

Studying Darwin



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This free course provides a sample of Level 1 study in Arts and Humanities

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Contents

Introduction	5
Learning Outcomes	6
1 Evolution and natural and artificial selection	7
2 Animals at the extremes	8
3 Studying mammals	9
4 How Darwin has influenced others	11
Conclusion	12
Keep on learning	13
Acknowledgements	13

Introduction

We have divided the collection under the following headings:

1. Evolution and natural selection
2. Animals at the extremes
3. Studying mammals
4. How Darwin has influenced others

Within the sections you will see a list of courses that appear elsewhere on the OpenLearn site – click on the link and this will take you to the appropriate course. You can return to this course whenever you like, to navigate to our other selected materials.

This OpenLearn course provides a sample of Level 1 study in [Arts and Humanities](#).

Learning Outcomes

After studying this course, you should be able to:

- understand Darwin's theory of evolution and natural selection
- recognise how his theory has influenced other work in this area and beyond.

1 Evolution and natural and artificial selection

In this course, we describe the theory of evolution by natural selection as proposed by Charles Darwin in his book, first published in 1859, *On The Origin of Species by Means of Natural Selection, or The Preservation of Favoured Races in the Struggle for Life*. We will look at natural selection as Darwin did, taking inheritance for granted, but ignoring the mechanisms underlying it.

[Evolution through natural selection](#)

[An introduction to biological systematics](#)

[Evolution: artificial selection and domestication](#)

In the 18th and 19th century evolutionary biologists, including Darwin, emphasised the similarities between natural evolution and artificial 'improvement' of livestock under domestication. They believed that studying domesticated animals and plants could illuminate the mechanisms of natural evolution.

2 Animals at the extremes

[The desert environment](#)

Animal life has adapted to survive in the most unlikely and inhospitable habitats. This course looks at the surprisingly diverse desert climates throughout the world and mammals, birds, lizards and amphibians that survive there. It splits these animals into three groups according to their strategy for survival: evaders, evaporators and endurers, then discusses how these strategies work on a biochemical and physiological level.

[Hibernation and torpor](#)

Hibernation is an ingenious adaptation that some animals employ to survive difficult conditions in winter. This course examines the differences between hibernation and torpor, and discusses the characteristic signs of hibernation behaviour. It explores the triggers that bring on hibernation, and whether internal signals or external season cues are predominant. It also examines the physiological adaptations that occur in hibernating animals. This course builds on and develops ideas introduced in the OpenLearn course ([Animals at the extreme: the desert environment](#)).

[Polar biology](#)

The extreme challenges of life in the polar regions require the animals who make their habitat there to make many adaptations. This course explores the polar climate and how animals like reindeer, polar bears, penguins, sea life and even humans manage to survive there. It looks at the adaptations to physiological processes, the environmental effects on diet, activity and fecundity, and contrasts the strategies of aquatic and land-based animals in surviving in this extreme habitat. This course builds on and develops ideas from two other 'Animals at the extreme' courses: ([The desert environment](#)) and ([Hibernation and torpor](#)).

[Surviving the winter](#)

In this course, we study one aspect of the fluctuating nature of an organism's environment. We consider how organisms living in a temperate climate, such as that in Britain, are adapted to cope with winter. You will see that there is much diversity of adaptations among organisms, with different species coping with the demands of a fluctuating environment in quite different ways. As cyclic variations are a widespread feature of environments, the range of adaptations to them is an important source of biological diversity.

[Changing climate: island life in a volatile world](#)

What impact will global warming really have? This course examines the potential problems faced by the people of the Pacific Island of Tuvalu as a result of rising sea levels. Where would you go if your island is only a few feet above sea level? Who would you blame?

3 Studying mammals

[A winning design](#)

The term mammal encompasses a huge variety of animals, including humans. But what makes a mammal a mammal? This course explores some of the features, such as reproduction, lactation and thermoregulation methods, that mammals have in common. It is the first in a series of 10 'Studying mammals' courses.

[The insect hunters](#)

From pygmy shrews to armadillos, a wide range of mammals survive on a diet made up largely of insects. Many of these have fascinating adaptations suited to catching or rooting out their prey. In this course you will learn about these adaptations, along with survival strategies for when food is scarce. This is the second course in the 'Studying mammals' series.

[Chisellers](#)

Ever wondered why rats, mice and squirrels seem to reproduce at such an alarming rate? Rodents are among the most successful of all the mammal groups. In this course you will learn more about some of the evolutionary features that make these creatures so plentiful. This is the third course in the 'Studying mammals' series.

[Plant predators](#)

From the mouse-deer to the elephant, plant eaters come in all shapes and sizes. But how do they manage to flourish on a salad diet? In this course we will examine the special features that allow them to extract their nutrients from leaves, and see how some plants protect themselves from these predators. This is the fourth course in the 'Studying mammals' series.

[The meat eaters](#)

The powerful and majestic carnivores are the focus of many television documentaries. In this course we will delve into the lives of these fearsome hunters and explore their physical adaptations and social behaviour. This is the fifth course in the 'Studying mammals' series.

[The opportunists](#)

Many mammals are food specialists, with complex adaptations that gear them toward a particular food source. So how do the omnivores survive and prosper without these fancy evolutionary features? This course examines the physiology, diet and strategies of some of these opportunistic feeders. It is the sixth course in the 'Studying mammals' series.

[Return to the water](#)

Some of the most unusual and versatile of all the mammals are the groups that live, feed and reproduce underwater. In this course we will see how these formerly land-based mammals adapted to a return to the water, discussing such challenges as breathing, movement and communication. This is the seventh course in the 'Studying mammals' series.

[Life in the trees](#)

David Attenborough looks at 'life in the trees': examining how species have evolved to cope with arboreal living. You will learn how lemurs, anteaters, bears and many others have developed different methods to help movement and survival.

[The social climbers](#)

Monkeys have long fascinated us because of their similarities to the human race. In this course you will find out about some of the characteristics that make them so like us: their physiology, complex social interactions, large brains and intelligence. This is the ninth course in the 'Studying mammals' series.

[Food for thought](#)

Who were our ancestors? How are apes and humans related? And where does the extinct *Homo erectus* fit into the puzzle? In this course we will examine culture, tool use and social structure in both apes and humans to gain an understanding of where we come from and why we behave as we do. This is the tenth course in the 'Studying mammals' series.

4 How Darwin has influenced others

The link below will take you to a timeline of psychologists. If you scroll down the list of people in the left-hand column and click on Darwin's name you will see from the link how influential Darwin's work was on others that followed, for example Freud, Pavlov, Dawkins. Read some background on Darwin from this page and then you may wish to click on the other people highlighted on this page to see the relevance and impact on their work, theories and ideas from Darwin's original theory.

[Click here to visit the timeline.](#)

Conclusion

This free course provided an introduction to studying the arts and humanities. It took you through a series of exercises designed to develop your approach to study and learning at a distance and helped to improve your confidence as an independent learner.

Keep on learning



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