



Course structure

Introduction to Animal Behaviour

AB101x

# INTRODUCTION

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Welcome to our Introduction to Animal Behaviour!

Hopefully most of you are here because you are, like us, interested in why animals do the things they do. Over **six modules**, this course will cover a broad range of topics about how animals behave in their natural context. Despite the huge diversity in shapes and sizes across animals, the basic rules underlying behaviour remain the same. Our course will use scientific studies on a wide range of different species and groups to illustrate these important concepts.

Good science involves asking the right questions, making specific predictions, and then testing these predictions using observations and experiments. There are **two short assignments in each module**, designed to get you asking questions about behaviour and learning about the process of studying it scientifically.

## COURSE OUTLINE

Module	Kick-off assignment	Main assignment
0: Course introduction	-	-
1: The science of animal behaviour	Animals around us	Challenges in studying behaviour
2: Learning, cognition & development	Learning	Get to know the scientific literature
3: Communication	Animal signals	Project assignment: Part 1 Planning your data collection
4: Foraging & Antipredator behaviour	Foraging	Project assignment: Part 2 Data collection
5: Mating systems and parental care	Parental care	Project assignment: Part 3 Writing your report
6: Living in groups	Social interactions	Project assignment: Part 4 Peer grading

# 1: THE SCIENCE OF ANIMAL BEHAVIOUR

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The first module will cover some of the key concepts you need to understand to make sense of animal behaviour. These will include evolution and natural selection, and why animal behaviour is important as a scientific field. We will also discuss the different types of question one can ask about behaviour, and the idea of scientific hypothesis testing.

## MODULE 1 TOPICS

Evolution and Natural Selection

Applications of animal behaviour

The 4 'Why' questions

The scientific method



# 2: LEARNING, COGNITION & DEVELOPMENT

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Module 2 focuses on learning and cognition: how animals gather information about the world, and how they apply this information by modifying their behaviour. Learning takes time, so this topic naturally leads us to discussing the development of behaviour more generally, and how it is influenced by the environment.

## MODULE 2 TOPICS

Why do animals learn?

Learning by association

Learning from others

Cognition and insight

Behavioural development



## 3: COMMUNICATION

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The third module is about communication, but what do we mean by this in the context of animal behaviour? In short, we consider communication to occur whenever one individual deliberately sends any sort of signal that influences the behaviour of another individual. This modules will cover the types of signals animals use, how they ensure they are transmitted, and whether they are honest.

### MODULE 2 TOPICS

Signals and information

Modes of communication

Signal design

Honest and dishonest signals

Communication networks

Complex communication



## 4: FINDING FOOD & AVOIDING PREDATORS

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Our overarching topic in module four is how animals obtain food, and avoid danger in their environment. These topics are inextricably linked, as many animals need to balance the need to feed themselves against the risks of becoming food for others. We will also cover why and how some animals migrate huge distances each year for food or breeding sites.

### MODULE 4 TOPICS

Feeding behaviour

Optimal foraging

Competition for resources

Antipredator behaviour

Dispersal and Migration





## 5: MATING SYSTEMS AND PARENTAL CARE

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Natural selection acts on animals through their genetic contributions to the next generation, so finding a mate and having offspring are the most important goals of an animal's life. During this module, we will look in detail at how animals go about choosing their partners, and ensuring their offspring are successful.

### MODULE 5 TOPICS

Sexual selection

Mate choice

Mate competition

Mating systems

Territoriality and Lekking

Parental care



## 6: LIVING IN GROUPS

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The final module explores social behaviour. You've probably noticed that some animals are almost always seen by themselves, others usually in small groups, and some in large groups almost all the time. But what drives this difference in sociality between species? As well as costs and benefits, we will look at how we measure who interacts with who, and how animals avoid being exploited by each other when cooperating.

### MODULE 6 TOPICS

Costs and benefits of group living

Social networks

Cooperation between relatives

Cooperation between non-relatives

Culture and human behaviour



# COURSE THEMES

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In addition to the topic videos, several other types of content reappear each week.

## DISCUSSIONS

Each module contains one video in which we interview a scientist about their work and discuss some related questions. This helps to illustrate more of the depth within out topics, and the kind of questions currently being studied.



## SCIENTIFIC METHODS

One video per module will be devoted to scientific methods. These are related to the main assignments, of each module, and also help you better understand the process behind studying the topics we discuss.

## OPTIONAL EXTENSION READING

We will also provide links and references to more in-depth articles, books and resources, if you want to learn more about the topics covered in our course.

# ASSIGNMENTS & GRADING

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## Kick-Off Assignments

Kick-off assignments appear near the start of each module, and are designed to get you thinking about the topic for that module. Many assignments ask you to post about your conclusions or activities on the forums: this is an excellent way to engage with your fellow learners. These are **not graded**.

## Main Assignments

Towards the end of each module you will be asked to complete main assignments that form a series introducing you to the process of research on animal behaviour. These assignments culminate in module 5 with submitting a report based on your observations. The assignment for module 6 is to peer-review the reports of four other students.

Submitting the final report and peer-reviewing four reports from other students contributes **20% of your overall grade** for the course. Your grade is the average of the peer-review of your report from three other students.

## Self-Test Questions

After most videos you will be presented with multiple-choice self-test questions. These are designed to help you check your knowledge of the material you just learned. Self-test questions are **not graded**, and you can attempt them as many times as you like.

## Multiple Choice Module Exams

At the end of each module, there is a multiple-choice exam. Your final grade for the module exams as a whole is the average of your 5 best exams, so you can miss one. These contribute **80% of your overall grade** for the course.

## GRADING

To earn a certificate at the end of this MOOC you need to score a grade of at least **70%** on the module exams and final report. Together, the **module exams** are worth **80%** of your final grade, and the **final report and peer-grading** are worth **20%**.

## ENJOY THE COURSE!

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This course will be a lot more fun if you engage with other learners. Share your experiences of the course and assignments with your peers by using the forum, and discuss them together.

If you can, try to follow this course together with friends, colleagues, or others you can meet in person. We know from other courses that following a MOOC together is great for both learning and motivation. In all cases, give your peers constructive feedback: the kind that you would like to receive.

At the start of each module, make sure you look at the assignments so you know what you need to do to keep on track.

We hope you have fun, and that our course inspires you to learn more about animal behaviour in future.

The AB101x MOOC team.