BIOL328

Animal Behaviour

S1 External 2019

Dept of Biological Sciences

Contents

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General Information

Unit convenor and teaching staff
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Credit points
3

Prerequisites
(39cp at 100 level or above) including (BIOL208 or BIOL228 or BIOL229 or BIOL257 or BIOL260 or BIOL262)

Corequisites

Co-badged status

Unit description
Communication underpins all social behaviour. Research on animal signalling provides insights into sensory processes, decision making and the factors determining success or failure in the struggle to reproduce. This unit reviews major current issues in the study of animal communication, taking a broadly integrative approach to cover evolution, development, function, and mechanism. Topics include: channels of communication; sensory systems; evolutionary origins; design features of language and communication systems; the problem of intentionality; manipulation; and deception.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

1. Describe the main categories of behaviour and communication observed in animals

2. Identify the proximate and ultimate mechanisms of animal behaviour

3. Understand the role of selection (natural & sexual) in shaping animal behaviour

4. Apply animal behaviour research to conservation issues

5. Conduct behavioural observation and apply methods of behavioural analysis

6. Design, conduct and analyse behavioural experiments

General Assessment Information

Unit completion requirements

To pass this subject you must achieve all of the following:

- Receive a final overall mark of >50%
- Miss no more than one practical (without approval). Don't go home unless you have signed off at a practical
- Submit all assignments

Assignment extensions and penalties

5% of the mark allocated for any assignment will be deducted for every 24 h period (or part thereof) that any work is submitted past the nominated deadline.

Assignment 1: poster

You will prepare a scientific poster based on research and data from one of your practicals. You will conduct original research in which you will test an hypothesis or answer a research question by designing a behavioural experiment in the practical. The results of this study will be communicated in an electronic poster (we will not print them). This assignment draws on research and communication skills that you will develop in this course.

Assignment 2: research report

You will conduct a series of behavioural experiments on sugar ants over the course of two practicals. You will determine the questions or hypotheses you wish to address based on the background information you are given, and any pilot studies you conduct. The results will be written as a short scientific paper in which you will present the analyses of your data and place it in the context of general animal behaviour theory.

Assessment Tasks

Name	Weighting	Hurdle	Due
Quizzes	10%	No	see iLearn
Poster of original research	10%	No	17 April
Mid-semester exam	15%	No	15 April
Report of experimental study	25%	No	29 April
Final exam	40%	No	Exam period

Quizzes

Due: **see iLearn**
Weighting: **10%**

There will be 4 online quizzes during the course of the semester.

On successful completion you will be able to:

- 1. Describe the main categories of behaviour and communication observed in animals
- 2. Identify the proximate and ultimate mechanisms of animal behaviour
- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 6. Design, conduct and analyse behavioural experiments

Poster of original research

Due: **17 April**
Weighting: **10%**

You will make a poster but will not be required to print it. The poster will be from one of your lab practicals in which you conducted an experiment.

On successful completion you will be able to:

- 1. Describe the main categories of behaviour and communication observed in animals
- 2. Identify the proximate and ultimate mechanisms of animal behaviour
- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 5. Conduct behavioural observation and apply methods of behavioural analysis
- 6. Design, conduct and analyse behavioural experiments

Mid-semester exam

Due: **15 April**
Weighting: **15%**

The mid-semester exam will take place in the lecture. It will cover the material from the lectures and practicals up until the day of the exam and will have a mix of multiple choice and short answer questions.

On successful completion you will be able to:

- 1. Describe the main categories of behaviour and communication observed in animals
- 2. Identify the proximate and ultimate mechanisms of animal behaviour
- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 6. Design, conduct and analyse behavioural experiments

Report of experimental study

Due: **29 April**

Weighting: **25%**

The experiment report will be written about an experiment you will conduct in the practical. It will include: an introduction, your methods, your results and a brief discussion.

On successful completion you will be able to:

- 1. Describe the main categories of behaviour and communication observed in animals
- 2. Identify the proximate and ultimate mechanisms of animal behaviour
- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 5. Conduct behavioural observation and apply methods of behavioural analysis
- 6. Design, conduct and analyse behavioural experiments

Final exam

Due: **Exam period**

Weighting: **40%**

The final exam will take place during the exam period in November. It will cover material from the lectures and pracs for the entire semester.

On successful completion you will be able to:

- 1. Describe the main categories of behaviour and communication observed in animals
- 2. Identify the proximate and ultimate mechanisms of animal behaviour
- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 4. Apply animal behaviour research to conservation issues
- 6. Design, conduct and analyse behavioural experiments

Delivery and Resources

Unit outline, lecture and practical materials and course notices will be distributed via iLearn.

http://ilearn.mq.edu.au

iLearn is a web-based computer mediated communication package and can be accessed by most web browsers from inside or outside the University. **iLearn** and email will be the principle method of communication in this subject.

You must use **iLearn** for:

- Regularly checking subject announcements—particularly with regard to the pracs and class readings;

- Downloading course materials;

- Downloading some of the reference material;

- Using the discussion board.

The URL for the **iLearn** log-in page is: http://ilearn.mq.edu.au/. You will need to log in to **iLearn** each time you use it. If you are having trouble accessing your online unit due to a disability or health condition, please go to the Student Services Website at http://students.mq.edu.au/suppor t/health_and_wellbeing/disability_service/services_available/ for information on how to get assistance. If you are having problems logging on and you cannot log in after ensuring you have entered your username and password correctly, you should contact Student IT Help, Phone: (02) 9850 4357 (in Sydney) or 1 800 063 191 (outside Sydney).

Textbook

You can certainly survive this course without a textbook. However, if you wish to get the most out of the course and really use the opportunity to learn something about animal behaviour, I recommend buying *Animal Behaviou*r (11th ed.) by Dustin Rubenstein and John Alcock, available at the Co-op bookshop on campus. There are also copies in the library that you can consult. And note that earlier editions (e.g. 10th ed.) are only by Alcock. There are many other animal behaviour books that will also be useful for this course. There are also likely to be plenty of second-hand copies for purchase online (of earlier editions). **Finally, reading this book will help with the quizzes.**

Unit Schedule

There will be several guest lectures by experts in their respective fields. We will also have a few people Skype in to the lecture and you will have the opportunity to ask questions.

This is the schedule of lectures by topic, but not by week.

- Signals and communication: general principles

- Eaves dropping and public information

- Deceptive signalling: mimicry and deimatism (anti-predator displays)

- Visual ecology

- Chemical ecology

- Acoustic communication

- Sexual selection and mating systems

- Sociality and social systems

- Parental care

- Hormones and behaviour

- Behavioural plasticity

- Genetics of behaviour

- Personality

- Anti-predator behaviour; sexual cannibalism

- Cognition

- Behaviour and conservation, animal ethics

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy

- Academic Integrity Policy

- Academic Progression Policy

- Assessment Policy

- Fitness to Practice Procedure

- Grade Appeal Policy

- Complaint Management Procedure for Students and Members of the Public

- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- 4. Apply animal behaviour research to conservation issues
- 6. Design, conduct and analyse behavioural experiments

Assessment tasks

- Quizzes
- Poster of original research
- Mid-semester exam
- Report of experimental study

- Final exam

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- 1. Describe the main categories of behaviour and communication observed in animals
- 2. Identify the proximate and ultimate mechanisms of animal behaviour
- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 4. Apply animal behaviour research to conservation issues
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- 6. Design, conduct and analyse behavioural experiments

Assessment tasks

- Quizzes
- Poster of original research
- Mid-semester exam
- Report of experimental study
- Final exam

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour
- 4. Apply animal behaviour research to conservation issues
- 5. Conduct behavioural observation and apply methods of behavioural analysis
- 6. Design, conduct and analyse behavioural experiments

Assessment tasks

- Quizzes

- Poster of original research

- Mid-semester exam

- Report of experimental study

- Final exam

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- 3. Understand the role of selection (natural & sexual) in shaping animal behaviour

- 4. Apply animal behaviour research to conservation issues

- 5. Conduct behavioural observation and apply methods of behavioural analysis

- 6. Design, conduct and analyse behavioural experiments

Assessment tasks

- Quizzes

- Poster of original research

- Mid-semester exam

- Report of experimental study

- Final exam

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- 6. Design, conduct and analyse behavioural experiments

Assessment tasks

- Quizzes
- Poster of original research
- Mid-semester exam
- Report of experimental study
- Final exam

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcome

- 4. Apply animal behaviour research to conservation issues

Assessment task

- Final exam

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcome

- 4. Apply animal behaviour research to conservation issues

Assessment task

- Final exam

Unit Description

This unit explores the fascinating world of animal behaviour, searching out unifying principles that underlie the extreme diversity of behaviour in nature. Why do birds and bees sing and dance? What keeps families together? How do animals find food? How do animals with very different sensory systems find their way about? How has animal behaviour been shaped by

evolution and what are the relative roles of natural and sexual selection?

This unit provides insights into sensory processes and decision making. It also reviews major current issues in the study of animal communication while exploring the physiological and neural mechanisms underpinning behaviour, and the function and evolution of natural behaviour. Lectures examine the natural behaviour of diverse animal species, from insects to humans, using instructive examples to illustrate evolution, navigation, foraging, predator–prey interactions, mating systems, mate choice, conflict, communication, and social behaviour. The course also covers theoretical and empirical aspects of animal signalling, modes of communication, the sensory basis of communication, and the evolution of signalling. Practical work involves observing behaviour, hypothesis development, data collection, and analysis.