



BBE 305

Animal Communication

S1 Day 2014

Dept of Biological Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor

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Other Staff

Katherine McClellan

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Credit points

3

Prerequisites

39cp including BBE200

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:

Identify the processes involved in signal evolution

Identify the major factors influencing signal design.

Describe the general principles pertaining to the form and function of signals involved in

mate attraction/courtship, social integration, conflict resolution, predator avoidance, foraging, and auto-communication

Cogently evaluate, synthesize, assess and critique animal communication scientific literature - in a written summary and in a class discussion.

Use computer sound analysis programs make spectrograms and power spectra of calls and measure acoustic characteristics of animal vocalizations including: fundamental frequency, duration, peak frequency, number of harmonics. Also, differentiate between tonal and atonal sounds using bandwidth measures.

Demonstrate competence in collecting avian vocalizations using recording equipment and appropriate recording methodology.

Generate testable hypotheses, design an experiment, collect and analyze the data and present written conclusions and, in an oral presentation, synthesise and communicate your findings.

Assessment Tasks

Name	Weighting	Due
<u>Final Exam</u>	40%	Exam Period
<u>Article Summary</u>	5%	March 17th
<u>Mid-semester test</u>	20%	April 7
<u>Experiment I</u>	15%	May 19, 26 & June 2
<u>Experiment II</u>	20%	June 9

Final Exam

Due: **Exam Period**

Weighting: **40%**

The final exam (worth 40% of your mark) will be held during the Semester 1 Exam Period and will be 2 hr (plus 10 min reading time). Please consult the University Handbook to determine the commencement and finishing dates of the compulsory exam period. Notes will not be permitted. The format of the exam will be nearly identical to the midterm exam (but longer) with multiple choice and short-answer questions. The exam questions have been carefully written to test understanding:

You will need to be able to apply animal communication principles to address short answer

questions (half page to one full page) where you will be asked to integrate concepts you have learnt during the course

On successful completion you will be able to:

- Identify the processes involved in signal evolution
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Article Summary

Due: **March 17th**

Weighting: **5%**

You will write a 2-page (double-spaced) article summary with critique on an article you select regarding animal communication. The article will be a primary resource from a scientific journal. This exercise will help you become familiar with the literature and contribute to your critical reading and writing skills. Specific guidelines and assessment criteria are posted on iLearn.

On successful completion you will be able to:

- Use computer sound analysis programs make spectrograms and power spectra of calls and measure acoustic characteristics of animal vocalizations including: fundamental frequency, duration, peak frequency, number of harmonics. Also, differentiate between tonal and atonal sounds using bandwidth measures.
- Demonstrate competence in collecting avian vocalizations using recording equipment and appropriate recording methodology.

Mid-semester test

Due: **April 7**

Weighting: **20%**

This is a multiple-choice and short answer exam covering material in the first half of the course including the relevant chapters in the textbook, material covered in the practicals and outside readings posted on iLearn.

On successful completion you will be able to:

- Identify the processes involved in signal evolution
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- Describe the general principles pertaining to the form and function of signals involved in

mate attraction/courtship, social integration, conflict resolution, predator avoidance, foraging, and auto-communication

Experiment I

Due: **May 19, 26 & June 2**

Weighting: **15%**

Written Report

You will write a formal report in the style of a scientific research article on the design and findings of your independent animal communication research project. This report will have sub-sections entitled: Abstract, Introduction, materials and Methods, Results, Discussion, and References. It will also have at least one table and one figure. More details will be posted on iLearn

On successful completion you will be able to:

- Use computer sound analysis programs make spectrograms and power spectra of calls and measure acoustic characteristics of animal vocalizations including: fundamental frequency, duration, peak frequency, number of harmonics. Also, differentiate between tonal and atonal sounds using bandwidth measures.
- Demonstrate competence in collecting avian vocalizations using recording equipment and appropriate recording methodology.

Experiment II

Due: **June 9**

Weighting: **20%**

Written Report

You will write a formal report in the style of a scientific research article on the design and findings of your independent animal communication research project. This report will have sub-sections entitled: Abstract, Introduction, materials and Methods, Results, Discussion, and References. It will also have at least one table and one figure. More details will be posted on iLearn

On successful completion you will be able to:

- Identify the processes involved in signal evolution
- Identify the major factors influencing signal design.
- Describe the general principles pertaining to the form and function of signals involved in

mate attraction/courtship, social integration, conflict resolution, predator avoidance, foraging, and auto-communication

- Cogently evaluate, synthesize, assess and critique animal communication scientific literature - in a written summary and in a class discussion.
- Generate testable hypotheses, design an experiment, collect and analyze the data and present written conclusions and, in an oral presentation, synthesise and communicate your findings.

Unit Schedule

Unit completion requirements

Students must complete/submit each of the set assessment tasks and receive a final mark of >50% in order to pass this subject.

Each week you should:

- Attend lectures, take notes, ask questions, read chapters in the text.
- Attend your tutorial and participate in the class discussions.
- Attend the practical session, and seek feedback from the practical demonstrator
- Read the outside reading posted on iLearn
- Work towards completing your oral presentation
- Keep in contact with your prac partner – with whom you will be presenting orally on an animal communication topic and with whom you will be conducting your (semi-) independent research project.

Use iLearn for:

- Checking announcements;
- Downloading lecture materials;
- Downloading reference materials;
- Downloading readings;
- Checking your grades;
- Discussing a topic relative to animal communication with your classmates.
- NOT for whinging. Whinging should be emailed to jennifer.clarke@mq.edu.au

How do you log in? The URL login page is: <http://learn.mq.edu.au/>.

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://www.campuslife.mq.edu.au/campus-wellbeing> for assistance.

Lectures

Week	Lecture	Textbook Reading
1	Communication: Venues and Modes	Chap 1 Outside readings posted on iLearn
2	Signal Evolution	Chap 10
3	Auditory Signals: Propagation, Reception	Chap 2, 3
4	Visual Signals: Production, Propagation	Chap 4, 5
5	Chemical Signals: Production, Transmission, Reception	Chap 6 Outside readings posted on iLearn
6	Mid-semester Exam	(study...study...study)
7	Exam Feedback	(none)
8	Guest Lecture	Outside reading posted on iLearn
9	Guest Lecture	Outside reading posted on iLearn
10	Territorial and Agonistic Signals	Chap 11
11	Signature Characteristics	Chap 13

12	Environmental Signals Conservation and Animal Communication	Chap 14 Textbook Pages 679-697 Outside readings posted on iLearn
13	Queen's Birthday	
	Examination weeks	

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/student_conduct/

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://stu>

dents.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

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

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

- Identify the processes involved in signal evolution
- Identify the major factors influencing signal design.
- Describe the general principles pertaining to the form and function of signals involved in mate attraction/courtship, social integration, conflict resolution, predator avoidance,

foraging, and auto-communication

- Cogently evaluate, synthesize, assess and critique animal communication scientific literature - in a written summary and in a class discussion.
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- Demonstrate competence in collecting avian vocalizations using recording equipment and appropriate recording methodology.
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Assessment tasks

- Final Exam
- Article Summary
- Mid-semester test
- Experiment II

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

- Identify the processes involved in signal evolution
- Identify the major factors influencing signal design.
- Cogently evaluate, synthesize, assess and critique animal communication scientific literature - in a written summary and in a class discussion.
- Generate testable hypotheses, design an experiment, collect and analyze the data and present written conclusions and, in an oral presentation, synthesise and communicate your findings.

Assessment tasks

- Final Exam

- Article Summary
- Mid-semester test
- Experiment II

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

- Identify the major factors influencing signal design.
- Cogently evaluate, synthesize, assess and critique animal communication scientific literature - in a written summary and in a class discussion.
- Use computer sound analysis programs make spectrograms and power spectra of calls and measure acoustic characteristics of animal vocalizations including: fundamental frequency, duration, peak frequency, number of harmonics. Also, differentiate between tonal and atonal sounds using bandwidth measures.
- Demonstrate competence in collecting avian vocalizations using recording equipment and appropriate recording methodology.

Assessment tasks

- Final Exam
- Article Summary
- Mid-semester test
- Experiment I
- Experiment II

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:

Assessment tasks

- Final Exam
- Article Summary

- Mid-semester test
- Experiment I
- Experiment II

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

- Demonstrate competence in collecting avian vocalizations using recording equipment and appropriate recording methodology.

Assessment task

- Experiment I