



# BIOL122

## Biological Basis of Behaviour

S2 External 2019

*Dept of Biological Sciences*

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#### **Disclaimer**

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

### Unit convenor and teaching staff

Convenor

Ken Cheng

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Kate Barry

[kate.barry@mq.edu.au](mailto:kate.barry@mq.edu.au)

### Credit points

3

### Prerequisites

### Corequisites

### Co-badged status

### Unit description

The greatest show on the Planet. This unit is a suitable introductory science unit for all students. It offers an integrative approach to the amazing world of behaviour. Basic mechanisms are covered, together with function and evolution. Lecture topics include: micro- and macro-evolution; evolutionary origins of behaviour; basic neuroscience; learning, brain and behaviour; and topics in animal behaviour. Lectures culminate with some reflections on the lives of humans in our modern world and the role of culture in human evolution.

## 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:

Describe the basic functioning of the nervous system in animals, including the senses

Explain the principles of evolution by natural selection and sexual selection

Outline basic concepts and principles of animal communication, sexual selection, human evolution, genetics, epigenetics, perception, learning, and the topics of animal behaviour presented in class

Extract and relate key theoretical ideas concerning the special topics on the evolution of human behaviour

Extract key points from scientific papers and accurately communicate these to a general audience

Comment critically on scientific papers with regard to life on our Planet today

## General Assessment Information

### Important note on assessment

Macquarie University operates on a grading scale in which High Distinction (HD) runs from 85–100, Distinction (D) runs from 75–84, Credit (CR) runs from 65–74, and Pass (P) runs from 50–65. Below that is failure (various stripes of F). The assessment system is standards based. This means that your performance on each assessment is evaluated according to absolute standards, and not according to a grade distribution. In the writing assignments, you will find descriptions of standards. For exams, the University has dictated the standards: they correspond to the grade ranges already presented above.

How it works for the final mark is that all assessments, each graded on the Macquarie scale, are averaged in a weighted fashion, with the weights for this course being those listed on page 5. Given the marks for each of the assessment pieces, the final mark is objectively determined, and you can't argue about it. We are not allowed to adjust final marks, even if a student misses a boundary by 0.1 marks. This makes those small pieces of easy marks—the e-textbook quizzes and quizzes for Lab exercises 1 and 2—very important for the final mark.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Regular review/quiz questions</a>	19%	Yes	Various dates
<a href="#">Lab exercise 1 part 1</a>	1%	No	Sunday 25 August (23:59)
<a href="#">Lab exercise 1 part 2</a>	3%	No	Sunday 25 August (23:59)
<a href="#">Lab exercise 2 part 1</a>	1%	No	Sunday 27 October (23:59)
<a href="#">Lab exercise 2 part 2</a>	6%	No	Due Sunday 27 October (23:59)
<a href="#">Draft commentary</a>	1%	No	Sunday 22 September (23:59)
<a href="#">Final commentary</a>	24%	No	Sunday 13 October (23:59)
<a href="#">Final exam</a>	45%	No	exam weeks

### Regular review/quiz questions

Due: **Various dates**

Weighting: **19%**

**This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle**

## assessment tasks)

### *Quizzes in textbook*

Each chapter of the e-textbook contains review questions. Some are open-ended questions, and others let readers enter answers. A subset of the answer-taking quiz/review questions counts for marks in this unit, as indicated in the textbook. You can and should treat all review questions as a test initially, answering them offline, because that helps you learn. But then of course, you should check both the textbook and lecture notes to make sure that you have the right answers, especially before submitting the quiz answers for marks. Be very mindful in submitting answers because any small error (e.g., misspelling in one letter) will be scored as incorrect, online platforms being pedantic and ruthless.

*We emphasize that performance on this component of assessments correlates highly with overall performance on this course.*

### Quiz due dates

Chapter 0 (Welcome), Q1: **Sunday 18 August; it is mandatory to do this give-away question, and failure to do it results in automatic failure**

Chapter 1: Tuesday 13 August

Chapter 2: Sunday 18 August

Chapter 3: Sunday 8 September

Chapter 4: Sunday 15 September

Chapter 5: Sunday 6 October

Chapter 6: Sunday 13 October

Chapter 7: Sunday 27 October

Chapter 8: Sunday 10 November

**NOTE: Only Quiz 1 (Q1, one question worth marks in Chapter 0) is a hurdle assessment, a hurdle that ensures that students obtain the required textbook for the unit.**

On successful completion you will be able to:

- Describe the basic functioning of the nervous system in animals, including the senses
- Explain the principles of evolution by natural selection and sexual selection
- Outline basic concepts and principles of animal communication, sexual selection, human evolution, genetics, epigenetics, perception, learning, and the topics of animal behaviour presented in class
- Extract and relate key theoretical ideas concerning the special topics on the evolution of human behaviour

## Lab exercise 1 part 1

Due: **Sunday 25 August (23:59)**

Weighting: **1%**

*Lab exercises 1 and 2*

These are short assignments based on the practicals in Weeks 2 and 8. Each is in two parts, with fuller instructions separately provided. Part 1 is a quiz in iLearn based on the lab exercise, and Part 2 is a document that you upload via turnitin in iLearn.

On successful completion you will be able to:

- Extract key points from scientific papers and accurately communicate these to a general audience

## Lab exercise 1 part 2

Due: **Sunday 25 August (23:59)**

Weighting: **3%**

*Lab exercises 1 and 2*

These are short assignments based on the practicals in Weeks 2 and 8. Each is in two parts, with fuller instructions separately provided. Part 1 is a quiz in iLearn based on the lab exercise, and Part 2 is a document that you upload via turnitin in iLearn.

On successful completion you will be able to:

- Extract key points from scientific papers and accurately communicate these to a general audience

## Lab exercise 2 part 1

Due: **Sunday 27 October (23:59)**

Weighting: **1%**

*Lab exercises 1 and 2*

These are short assignments based on the practicals in Weeks 2 and 8. Each is in two parts, with fuller instructions separately provided. Part 1 is a quiz in iLearn based on the lab exercise, and Part 2 is a document that you upload via turnitin in iLearn.

On successful completion you will be able to:

- Extract key points from scientific papers and accurately communicate these to a general audience

## Lab exercise 2 part 2

Due: **Due Sunday 27 October (23:59)**

Weighting: **6%**

### *Lab exercises 1 and 2*

These are short assignments based on the practicals in Weeks 2 and 8. Each is in two parts, with fuller instructions separately provided. Part 1 is a quiz in iLearn based on the lab exercise, and Part 2 is a document that you upload via turnitin in iLearn.

On successful completion you will be able to:

- Extract key points from scientific papers and accurately communicate these to a general audience

## Draft commentary

Due: **Sunday 22 September (23:59)**

Weighting: **1%**

### Commentary

The commentary is a short article summarising and commenting on a recent article, a piece meant for a popular audience. Further instructions are provided separately. This writing assignment has a due date for a draft (worth 1%) and the final product. The purpose of the draft is to get you some feedback from the tutors. Both first drafts and final submissions should be uploaded via turnitin onto iLearn. Every submission is electronic in this class.

Note that marks on writing assignments are subject to adjustments to balance any discrepant grading standards of different tutors.

On successful completion you will be able to:

- Extract key points from scientific papers and accurately communicate these to a general audience
- Comment critically on scientific papers with regard to life on our Planet today

## Final commentary

Due: **Sunday 13 October (23:59)**

Weighting: **24%**

### Commentary

The commentary is a short article summarising and commenting on a recent article, a piece meant for a popular audience. Further instructions are provided separately. This writing assignment has a due date for a draft (worth 1%) and the final product. The purpose of the draft is to get you some feedback from the tutors. Both first drafts and final submissions should be uploaded via turnitin onto iLearn. Every submission is electronic in this class.

Note that marks on writing assignments are subject to adjustments to balance any discrepant grading standards of different tutors.

On successful completion you will be able to:

- Extract key points from scientific papers and accurately communicate these to a general audience
- Comment critically on scientific papers with regard to life on our Planet today

## Final exam

Due: **exam weeks**

Weighting: **45%**

Final exam

The final exam consists of 50 multiple-choice questions, based on lectures from Week 1 to Week 12 (Week 13 being a review). You must present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.

On successful completion you will be able to:

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- Explain the principles of evolution by natural selection and sexual selection
- Outline basic concepts and principles of animal communication, sexual selection, human evolution, genetics, epigenetics, perception, learning, and the topics of animal behaviour presented in class
- Extract and relate key theoretical ideas concerning the special topics on the evolution of human behaviour

## Delivery and Resources

### Lectures

Tuesdays 2–4 p.m. in 14 Sir Christopher Ondaatje Ave, Mason Theatre, live streamed via link in iLearn.

Useful instructions: <https://echo360.org.au/media/7d7724ea-8ad3-4435-a3e0-c14dd5c81b86/public>

### Practicals and tutorials

For internal students, Practical and tutorials take place on Wednesdays in 11 Wally's Walk (E5A) 220, and on Fridays in 6 Wally's Walk (E8C) 106/110, in Weeks 1–9, 11, and 13.

For external students, practicals and tutorials take place on Saturdays, 9:00–14:00 in 6 Wally's

Walk (E8C) 112, in Weeks 2, 4, 6, 8, and 12.

University rules now stipulate that attendance at practicals and tutorials in first-year classes is **mandatory. Missing any one session results in automatic failure.**

**You must wear closed-in shoes to pracs. And no food or drink is allowed in labs for pracs. Bring your laptop if you have one: you can use it during pracs and our supply is limited.**

All students must access their University email account frequently. All communication from this unit and from the University will come via your University account. Use your University account for communication so that your message does not get blocked or filtered out as junk.

### Textbook

*Biological Basis of Behaviours* — A Top Hat Interactive Text This resource is required to receive full marks for the review questions. Top Hat is an interactive textbook and homework platform that can be accessed from your laptop, mobile phone, or tablet. Students who use this book find a hands-on reading experience that includes questions to test your knowledge, YouTube videos, and many figures. This is an *online* text. **How do you get the book?** 1. Click on this link: <https://app.tophat.com/e/944789>; make sure you get the correct version

2. Sign-up for a Top Hat online account

3. Follow the prompts to access the textbook

Your textbook will be applied at checkout for the total cost of \$60.00 AUD. Should you require assistance with Top Hat at any time, please contact their Support Team directly by way of email ([ausupport@tophat.com](mailto:ausupport@tophat.com)), by phone at 1800 847 966, or through the in-app Support button.

### What is new this year?

Not much is new this year. Some lecture materials and assessment items have been updated. It is mandatory to buy the e-textbook, as answering at least one question in the e-textbook is required for passing the unit.

## Unit Schedule

### Lecture schedule

R = pre-recorded lecture. They are on iLearn, and you should listen to these lectures on your own each week. In case of problems with the videos, contact [biol122@mq.edu.au](mailto:biol122@mq.edu.au)

Week	Lecture	Topic
1	1-1	Overview and introduction
29 July–	1-2 (ch. 1)	How science 'works'
	1-3 (ch. 1)	Ethics



	1-4R (ch. 1)	Good study habits
2	2-1R (ch. 2)	Brief history
5 Aug–	2-2 (ch. 2)	Tinbergen's explanations
3	3-1 (ch. 3)	Darwin and evolution
12 Aug–	3-2R (ch. 3)	Evolution on a small scale
4	4-1R (ch. 3)	Evolution on a large scale
19 Aug–	4-2 (ch. 3)	Evolution of behaviour
5	5-1R (ch. 3)	Genetics and epigenetics
26 Aug–	5-2 (ch. 4)	Nervous system 1 (A Narendra)
6	6-1 (ch. 4)	Nervous system 2 (A Narendra)
2 Sept–	6-2R (ch. 5)	Senses
7	7-1 (ch. 5)	Perception (a 'folk musical')
9 Sept–	7-2R (ch. 6)	Learning 1: Basics
<b>Midsemester break 16 September–29 September</b>		
8	8-1 (ch. 6)	Learning 2: Cognitive approaches to learning

30 Sept–	8-2R (ch. 7)	Animal behaviour 1
9	9-1 (ch. 7)	Animal behaviour 2
7 Oct–	9-2R (ch. 7)	Communication
10	10-1 (ch. 7)	Sexual selection
14 Oct–	10-2R (ch. 8)	Human evolution
11	11-1R (ch. 8)	Family and sociality
21 Oct–	11-2 (ch. 8)	Darwinian psychiatry: depression
12	12-1R (ch. 8)	Sociality, culture, altruism, and human evolution
28 Oct–	12-2 (ch. 8)	Rise of civilisation and its influence on the Planet
13	13-1	Summary and review
4 Nov–	13-2	Course song!

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](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) (<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](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://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](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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](http://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](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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/](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 outcome

- Comment critically on scientific papers with regard to life on our Planet today

#### Assessment tasks

- Lab exercise 2 part 2
- Draft commentary
- Final commentary

### 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

- Describe the basic functioning of the nervous system in animals, including the senses
- Explain the principles of evolution by natural selection and sexual selection
- Outline basic concepts and principles of animal communication, sexual selection, human evolution, genetics, epigenetics, perception, learning, and the topics of animal behaviour presented in class
- Extract and relate key theoretical ideas concerning the special topics on the evolution of

human behaviour

- Extract key points from scientific papers and accurately communicate these to a general audience
- Comment critically on scientific papers with regard to life on our Planet today

## **Assessment tasks**

- Regular review/quiz questions
- Lab exercise 1 part 1
- Lab exercise 1 part 2
- Lab exercise 2 part 1
- Lab exercise 2 part 2
- Draft commentary
- Final commentary
- 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 outcome**

- Extract and relate key theoretical ideas concerning the special topics on the evolution of human behaviour

### **Assessment tasks**

- Draft commentary
- Final commentary
- 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 outcome

- Comment critically on scientific papers with regard to life on our Planet today

## Assessment tasks

- Draft commentary
- Final commentary

## 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 outcomes

- Extract key points from scientific papers and accurately communicate these to a general audience
- Comment critically on scientific papers with regard to life on our Planet today

## Assessment tasks

- Lab exercise 1 part 2
- Lab exercise 2 part 2
- Draft commentary
- Final commentary

## 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

- Comment critically on scientific papers with regard to life on our Planet today

## Assessment tasks

- Draft commentary

- Final commentary

## 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:

### Assessment tasks

- Draft commentary
- Final commentary

## Changes since First Published

Date	Description
24/07/2019	More textbook detail
24/07/2019	Textbook details added
15/07/2019	Change of room for external sessions