



# BIOL602

## Evolution

S1 Day 2017

*Dept of Biological Sciences*

### Contents

---

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>General Assessment Information</u>	3
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	6
<u>Policies and Procedures</u>	7
<u>Graduate Capabilities</u>	9

---

#### **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

Unit Convenor

Simon Griffith

[simon.griffith@mq.edu.au](mailto:simon.griffith@mq.edu.au)

Contact via [simon.griffith@mq.edu.au](mailto:simon.griffith@mq.edu.au)

W19 F Room 134

Tuesday 9-5

Caitlin Kordis

[caitlin.kordis@mq.edu.au](mailto:caitlin.kordis@mq.edu.au)

Credit points

4

Prerequisites

Admission to MConsBiol or GradDipConsBiol or GradCertConsBiol or MSc

Corequisites

Co-badged status

BIOL602

Unit description

This unit deals coherently with the unifying theory of the biological sciences - evolution. Evolutionary biology helps us to understand the history of life on earth, and the inter-relationships between different groups of organisms. The unit will examine how evolutionary processes create biodiversity in the natural world with respect to organismal structure, physiology, and behaviour. The unit will also demonstrate how an evolutionary framework informs contemporary issues such as the emergence of pandemic disease, the human obesity crisis, and selection as a result of global climate change.

## 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:

Define evolution and distinguish micro- and macroevolution, and natural and sexual selection

- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## General Assessment Information

In order to be eligible to receive a pass (P) or greater in this unit, it is incumbent upon you to make a genuine effort at **completing all assessment tasks** and must achieve a pass mark (50%) across the whole course. We would like you to attend all practicals and must have attended over 70% of them.

### Extensions, penalties and special consideration

Late assignments will attract a penalty at the rate of **5%** of the total mark allocated for the assignment **per day** past the due date. The deadlines for assignments are **not negotiable**. You will only avoid penalties if you can produce a valid medical certificate or a letter with appropriate supporting documents outlining serious extenuating circumstances. All applications for special consideration or extension must be sought via the Faculty of Science through the student portal *before the due date* unless this is impossible. In addition you should also notify the course convener, Prof. Simon Griffith, via Dialogue on iLearn.

### The return of assessment tasks

Assessed assignments will be returned with feedback (where appropriate) via iLearn and marks given in Gradebook.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>Online Quizzes</u></a>	10%	No	After 7 days
<a href="#"><u>Practical Reports</u></a>	20%	No	One week after posting
<a href="#"><u>News article evaluation</u></a>	10%	No	5th May
<a href="#"><u>Research project plan</u></a>	20%	No	26th May

Name	Weighting	Hurdle	Due
<u>Final Exam</u>	40%	No	TBA

## Online Quizzes

Due: **After 7 days**

Weighting: **10%**

Each third week on iLearn there will be a range of questions based on the course content delivered in lectures in the preceding few weeks. This will remain open for assessment for the next seven days (closing at 11pm on the Friday after it has been posted). This material will help you to review course content, develop your examination skills and assess your understanding of the key concepts. Questions will be in multiple-choice format. An equal number of marks will be available for each of the four quizzes, and altogether will make up 10% of the course marks. The material will remain available online throughout the duration of the course but responses after the weekly deadline has passed will not be credited.

On successful completion you will be able to:

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## Practical Reports

Due: **One week after posting**

Weighting: **20%**

Each practical will be assessed through the completion of an assessment task on iLearn. The assessment task on iLearn will be opened the day after the practical class is taken, and your completion of the assessment tasks will be dependent upon the notes that you have taken for yourself during the practical class. You should therefore maintain a comprehensive notebook which documents all of the work and discussion during the practical sessions. Thus, all notes, records, illustrations and results should be entered into your practical book during class. We recommend that you use an A4 ring-binder with lined paper for notes and blank paper for diagrams. The practical assessment task on iLearn will remain open for one week and then be closed. In total, five practical classes will be assessed in this way, and an equal number of marks will be available for each. The three best marks you achieve across these practical assessments

will be used towards your overall course grade.

On successful completion you will be able to:

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## News article evaluation

Due: **5th May**

Weighting: **10%**

This assignment will focus on the coverage of stories related to evolutionary biology in the popular media. A library of short news stories will be compiled from the popular press and you will select three stories and write a report of around 800 words to summarise your exploration of the underlying science behind the stories. The report will be structured around the full details to be posted on iLearn in Week 4.

On successful completion you will be able to:

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## Research project plan

Due: **26th May**

Weighting: **20%**

In this major written assessment you will be required to conduct literature research of the primary literature in order to map-out a research project addressing a major evolutionary question. This assessment will build upon a lot of discussion of experimental design and different research

techniques in the lectures and pracs

This written report will be due towards the end of the course and build on knowledge acquired from the lecture material and practicals up to that point. The full details of the assessment task will be released on iLearn in Week 7, and it will be due for submission in Week 11. This assessment will also be facilitated through a tutorial given in the practical slot in Week 8.

On successful completion you will be able to:

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics

## Final Exam

Due: **TBA**

Weighting: **40%**

You will be tested on your knowledge of all course content, including information from lectures and practical classes up to and including week 13, plus prescribed reading from the course text book (Zimmer & Emlen 2016) and other sources provided through the weekly reviews on iLearn. The exam will consist of multiple-choice and short answer questions. The exam will take place during the formal end-of-session exam period.

On successful completion you will be able to:

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics

## Delivery and Resources

### Required reading

**Evolution: Making sense of Life (second edition), Carl Zimmer & Douglas J. Emlen (2016), Roberts and Company Publishers Inc, Greenwood Village, Colorado, US. ISBN 978-1-936221-55-4**

This text-book is required reading for the course and complements the material covered in lectures and practical classes. Students will be examined on material that may be covered only in the lectures, the text-book, or the practical component.

### Required unit materials

For practical classes we recommend that you use an A4 ring-binder with lined paper for taking notes and blank paper for diagrams.

You will also need **a lab coat and enclosed shoes** for every practical class in accordance with standard laboratory safety procedures. **Without either of these you will not be allowed entry to the laboratory.**

Lecture graphics and recordings will be available on iLearn (<http://ilearn.mq.edu.au>).

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

You are expected to use iLearn for:

- Regularly checking subject announcements
- Downloading lecture, laboratory and reference materials
- Completing review questions
- Submitting assignments
- Checking your grades

*How do you log in?* The URL for iLearn log in page is: <http://ilearn.mq.edu.au/>.

You must log in each time you use it. Your user name is your student number, and your password is your myMQ student portal password, provided upon enrolment (unless you've changed it). If you are having trouble accessing your online unit due to a disability or health condition, please go to the Student Services Website for information on how to get assistance. If you are having problems logging on, that is, if you cannot log in after ensuring you have entered your username and password correctly, you should contact Student IT Help, Phone: (02) 9850 4357.

## 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](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html)

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

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy (in effect until Dec 4th, 2017): [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html)

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

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/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, 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).

## 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)



## 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:

#### Assessment tasks

- Practical Reports
- News article evaluation
- Research project plan

### Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

#### Learning outcome

- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology

#### Assessment tasks

- Online Quizzes
- News article evaluation

### 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

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics

## Assessment tasks

- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan
- 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

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically

- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## Assessment tasks

- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan
- 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

- Identify and contrast different concepts of species
- Interpret cladograms to infer evolutionary relationships among organisms
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics

## Assessment tasks

- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan

## 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**

- Define evolution and distinguish micro- and macroevolution, and natural and sexual selection
- Identify and contrast different concepts of species
- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Analyse collected data using [simple] statistics and present it graphically
- Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## **Assessment tasks**

- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan
- 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:

## **Assessment task**

- News article evaluation

## **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 outcomes**

- Apply scientific techniques, including microscopy, measurement, and observation, to [collect data and] answer questions in evolutionary biology
- Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

## **Assessment task**

- News article evaluation