



BIOL2510

Evolution

Session 1, Weekday attendance, North Ryde 2020

Department of Biological Sciences

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General Information

Unit convenor and teaching staff

Lecturer and Convener

Simon Griffith

simon.griffith@mq.edu.au

Contact via During or after class on Tuesday morning, or email

Credit points

10

Prerequisites

50cp including ((BIOL1310 or BIOL114 or BIOL1110 or BIOL115) and 10cp from BIOL units at 1000 level)

Corequisites

Co-badged status

BIOL6510

Unit description

This unit follows on from biology units at 1000 level, and will deal 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:

ULO1: Define evolution and distinguish micro- and macroevolution, and natural and sexual selection

ULO2: Interpret cladograms to infer evolutionary relationships among organisms

ULO3: Apply scientific techniques, including microscopy, measurement, and

observation, to [collect data and] answer questions in evolutionary biology

ULO4: Evaluate the different approaches to studying evolution, including [using] the fossil record, experimental biology, field biology, and genomics

ULO5: Argue the importance of evolution in addressing contemporary global issues, with support from the scientific literature

ULO6: Demonstrate foundational learning skills including active engagement in the learning process

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult [iLearn](#) for revised unit information.

[Find out more about the Coronavirus \(COVID-19\) and potential impacts on staff and students](#)

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

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.

Unit Schedule

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult [iLearn](#) for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

There are three components to the schedule. 1. The pre-recorded lecture material that will all be posted online and covers the fundamental material that contributes to an understanding of evolutionary biology and follows the structure of the text book. 2. The practical classes that will introduce you to 'hands-on' evolutionary biology and complement the material in lectures. 3. The case study material that will be delivered through the provision of material online each week, as well as through the case-study classes given each week in the class time (8-10 Tuesday morning).

The schedule for each of these three components is given below

Lecture outline

	DATE	TOPIC	LECTURER
1	25 Feb	Introduction/ Course overview	SG
2	25 Feb	The approach to Evolutionary Biology (Ch. 1 in text)	
3	3 March	History of evolutionary ideas (Ch. 2 in text)	JA
4	3 March	The tree of life (Ch. 4 in text)	
5	10 March	Biogeography	
6	10 March	Macroevolution (Ch. 14 in text)	
7	17 March	Heritable variation among individuals (Ch. 5 in text)	SG
8	17 March	Heritable variation among individuals (Ch. 5 in text)	
9	24 March	Drift and Selection (Ch. 6 in text)	
10	24 March	Drift and Selection (Ch. 6 in text)	
11	31 March	Quantitative genetics (Ch. 7 in text)	
12	31 March	Quantitative genetics (Ch. 7 in text)	
13	7 April	Natural Selection (Ch.8 in text)	
14	7 April	Natural Selection (Ch.8 in text)	
MID SEMESTER BREAK			
13	28 April	History in genes (Ch. 9 in text)	SG
14	28 April	Adaptation (Ch. 10 in text)	
15	5 May	Sex: causes and consequences (Ch. 11 in text)	
16	5 May	Sex: causes and consequences (Ch. 11 in text)	
17	12 May	Life history evolution (Ch. 12 in text)	
18	12 May	Life history evolution (Ch. 12 in text)	

19	19 May	Origin of species (Ch. 13 in text)		
20	19 May	Origin of species (Ch. 13 in text)		
21	26 May	Intimate partnerships: co-evolution (Ch. 14 in text)		
22	26 May	Intimate partnerships: co-evolution (Ch. 14 in text)		
23	2 June	No lecture		
24	2 June	No lecture		

Case study outline

	Week beginning	TOPIC	LECTURER
1	25 Feb	Introduction	SG
	3 March	NO CASE STUDY – reading for wk3	
2	10 March	Snail shell polymorphism	
3	17 March	Plant domestication	
4	24 March	Extinction	JA
5	31 March	Migration	SG
6	7 April	Urban evolution	
MID SEMESTER BREAK			
7	28 April	Adaptation to climate change	SG
8	5 May	Animal domestication	
9	12 May	Biogeography and Darwin's finches	
10	19 May	Evolution of sperm	

11	26 May	Virus evolution	
	2 June	NO CASE STUDY	

Practical Sessions

Session week	DATE	ACTIVITY
1	24 February	NO PRACTICAL
2	2 March	Variation – Shells and bills
3	9 March	Seed size
4	16 March	Phylogeny
5	23 March	Selection on Campus (I)
6	30 March	Selection on Campus (II)
7	6 April	NO PRACTICAL
8	27 April	Evolution of Bill morphology (SimBio + specimens)
9	4 May	NO PRACTICAL
10	11 May	Adaptation to climate – fruit flies
11	18 May	Guppies (Photos + SimBio)
12	25 May	Clinal variation in acacia
13	1 June	NO PRACTICAL

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.*)

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](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>).

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

Plagiarism: All written work must be in the student's own words. Assessments submitted via Turnitin will be subjected to plagiarism detection. Plagiarism will not be tolerated. Penalties for plagiarism range from loss of marks to awarding of a zero, depending upon the level of

plagiarism, and reporting to the Faculty Disciplinary Committee.

Also, if late submissions are accepted, please specify the policy for them. For example:

Late submissions: Assessments submitted after the due date and without an approved Special Consideration will be penalised one mark per day late. For example, if the assessment carries a value of 30% of the total unit grade and you initially achieve a score of 20/30 (67%) but have submitted one day late, one mark will be subtracted from the initial score (ie $20 - 1 = 19$ out of 30 = 63%).

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 help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

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.

Changes since First Published

Date	Description
13/02/2020	Staff change
11/02/2020	made those additional changes