BIOL602

Evolution

S1 Day 2018

Dept of Biological Sciences

Contents

General Information	2
Learning Outcomes	2
General Assessment Information	3
Assessment Tasks	3
Delivery and Resources	7
Unit Schedule	8
Policies and Procedures	8
Graduate Capabilities	9
Changes from Previous Offering	14
Changes since First Published	14

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General Information

Unit convenor and teaching staff
Unit Convenor
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W19 F Room 134
Tuesday 9-5

Caitlin Kordis
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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
Weekly reading material	40%	Yes	Weekly 1-12
Online Quizzes	10%	No	After 7 days
Practical Reports	20%	No	One week after posting
News article evaluation	10%	No	15th April

Name	Weighting	Hurdle	Due
Research project plan	20%	No	25th May

Weekly reading material

Due: **Weekly 1-12**
Weighting: **40%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Each week, material will be presented on iLearn that will require you to spend a minimum of two hours reading/ listening / watching, and then answering some questions in an online quiz. This content will be chosen to improve your understanding of evolutionary processes and will promote ongoing engagement with the subject. The material will be posted along with the assessment task on Wednesday of each week, and each assessment must have been completed within a two week deadline. Whilst this material will require a significant investment in your time each week, the ongoing assessment through this task will replace the end of session exam. The material and its assessment will not exceed the Departments expectations of the weekly time that should be invested in a course at this level. It is a requirement that you have completed 7 out of the 10 assessments available within the respective timeframe.

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

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, 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
- 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

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: **15th April**
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: **25th 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

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.

Unit Schedule

There will be a double lecture each week at 4pm on Monday in the Lecture theatre on the ground floor of 14 Sir Christopher Ondaatje Ave. Room - Theatre 100. This is the building formally known as E7B. Lectures have been scheduled for the same day as the practical in an effort to make it easier for you to attend the lectures. Lecture attendance is strongly encouraged as it will help in your understanding and ongoing learning (which will be tested regularly through iLearn-based quizzes).

Each week there will be practical classes held in the teaching labs in F7B (4 Wallys Walk) Science labs 105,107, 110. These labs will be held across two sessions, either 9-12 or 13-16, and weekly attendance is compulsory for internal students.

External students will complete these practicals during special on campus sessions on 24th April and 26th and 27th April.

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 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.

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

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:

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

- Weekly reading material
- 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

- Weekly reading material
- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan

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
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Assessment tasks

- Weekly reading material
- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan

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

- Weekly reading material
- 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
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Assessment tasks

- Weekly reading material
- Online Quizzes
- Practical Reports
- News article evaluation
- Research project plan

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

Changes from Previous Offering

In 2018 we have removed the final examination from the course requirements because we believe that better learning outcomes can be achieved from students investing that time in ongoing activities relating to the subject matter. Instead of assessment through a final exam, we have introduced a weekly assessment task that will require some reading and assessment through iLearn. It is anticipated that this work will require an investment of between 1-2 hours each week.

Changes since First Published

Date	Description
26/02/2018	26th February. I have corrected the due dates for two assignments that were herein incorrect and did not match with those given on the iLearn site and the PDF of the unit guide.