



BIOX1310

Organisms to Ecosystems

Session 1, In person-scheduled-infrequent, North Ryde 2024

School of Natural Sciences

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General Information

Unit convenor and teaching staff

Unit convenor

Darrell Kemp

darrell.kemp@mq.edu.au

Consultation via appointment

Practical coordinator

Ryan Nevatte

ryan.nevatte@mq.edu.au

Credit points

10

Prerequisites

Corequisites

Co-badged status

BIOL1310

Unit description

This unit introduces students to the essential concepts in current biology. BIOX1310 forms the first step for students pursuing a career in the biological sciences, and provides a basis for students in other disciplines who wish to maintain an interest in this dynamic field. The theme of this unit is evolution. The first part of the unit is concerned with the origin of life and discusses current theories on how life may have arisen on a previously lifeless planet. We discuss evolutionary theory in detail including some of the genetic principles that underlie evolution. In the second part we introduce the major groups of organisms examining their diversity and how they function. In the final part we discuss the ecological interactions between organisms from the small scale to global patterns. Throughout the unit, these core concepts are illustrated with examples from current research. BIOX1310 is designed as a companion unit to BIOX1110 in Session 2 and requires attendance at an on-campus session.

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 describe its main mechanisms

ULO2: Define the major evolutionary transitions of organisms on earth

ULO3: Differentiate the main groups of organisms and interpret their evolutionary relationships

ULO4: Contrast major ecological processes and describe biogeographical patterns

ULO5: Synthesise experimental results and information from the scientific literature to prepare a scientific report

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

General Assessment Information

1. Requirements to Pass this Unit

To pass this unit you must:

(a) Participate in, and undertake all hurdle activities for, a minimum equivalent to 7 of the 10 weekly practical classes, and

(b) Achieve an overall assessment mark equal to or greater than 50%

Hurdle assessment - participation in unit practicals

The development of knowledge and skills requires continual practice at authentic problems in a laboratory-based setting. This unit has weekly laboratory classes and you must demonstrate your progress in developing and communicating knowledge and skills in a minimum equivalent to 7 of the 10 scheduled classes. This is a hurdle assessment, meaning that failure to meet this requirement may result in a fail grade for the unit. Students are permitted up to three absences: additional absences will require you to apply for Special Consideration (see further below).

2. Late Assessment Submission Penalty Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is 11:55 pm. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special consideration.

Assessments where Late Submissions will be accepted: Assessment 1 (Research report) – standard late penalty applies.

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment.

Practical-based tasks: To pass the unit you need to demonstrate ongoing development of skills

and application of knowledge in the equivalent of 7 out of 10 weekly practical classes. For infrequent students this typically means participation in all three days of scheduled on-campus practicals. If you will miss any of these sessions due to a serious, unavoidable and significant disruption, contact the unit's tutorial convenor ASAP (via email: biol1310@mq.edu.au) as you may be able to attend one or more of the weekly classes.

Note that it is not necessary for you to apply for special consideration for missing part of the on-campus practical schedule unless you have (or will) miss the equivalent of 3 or more weekly classes (i.e., roughly one day of the on-campus session).

4. Assessment activities and other information

Infrequent attendance students should complete pre-practical quizzes **each week** and according to schedule of practicals as conducted for regular weekday students. This will be clearly communicated via the unit's iLearn site. Quizzes and the mid-semester test will be administered online via this site, and you will submit your assignment via a link provided on the site.

Assessment outcomes and feedback will be provided via the iLearn "gradebook" function.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Research Report</u>	30%	No	24 May 2024
<u>Mid-semester test</u>	15%	No	9 Apr 2024
<u>Pre-practical Quizzes</u>	10%	No	Weekly (in practical weeks)
<u>Weekly Practical Classes</u>	5%	Yes	OCS: 23 Mar & 23-24 Apr
<u>Final exam</u>	40%	No	TBA

Research Report

Assessment Type ¹: Report

Indicative Time on Task ²: 20 hours

Due: **24 May 2024**

Weighting: **30%**

In this assignment you will write a short research report on an experiment we have conducted in the practicals. The report will be in the style of a scientific paper, but somewhat shorter. It will contain a title, introduction, methods, results (with figures and/or tables), discussion and reference list. Prior to this, a practical will be dedicated to explaining all elements of the research report and marking rubric.

On successful completion you will be able to:

- Define evolution and describe its main mechanisms
- Contrast major ecological processes and describe biogeographical patterns
- Synthesise experimental results and information from the scientific literature to prepare a scientific report

Mid-semester test

Assessment Type ¹: Examination

Indicative Time on Task ²: 15 hours

Due: **9 Apr 2024**

Weighting: **15%**

The mid-semester test will cover lecture and practical material, and will consist of multiple choice.

On successful completion you will be able to:

- Define evolution and describe its main mechanisms
- Define the major evolutionary transitions of organisms on earth
- Differentiate the main groups of organisms and interpret their evolutionary relationships
- Contrast major ecological processes and describe biogeographical patterns

Pre-practical Quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 12 hours

Due: **Weekly (in practical weeks)**

Weighting: **10%**

Weekly practical quizzes are required to be undertaken prior to the start of the practical class. The purpose of the quiz is to ensure that you are familiar with the activities of the practical and the biological concepts they cover.

On successful completion you will be able to:

- Define evolution and describe its main mechanisms
- Define the major evolutionary transitions of organisms on earth
- Differentiate the main groups of organisms and interpret their evolutionary relationships

- Contrast major ecological processes and describe biogeographical patterns
- Demonstrate foundational learning skills including active engagement in the learning process

Weekly Practical Classes

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 12 hours

Due: **OCS: 23 Mar & 23-24 Apr**

Weighting: **5%**

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

Development of knowledge and skills requires continual practice at authentic tasks. In each weekly practical class, you will undertake a range of activities and record your progress in a lab book. To pass this hurdle assessment, you must be able to demonstrate your progress in developing and communicating knowledge and skills in a minimum of 80% of practical classes.

On successful completion you will be able to:

- Synthesise experimental results and information from the scientific literature to prepare a scientific report
- Demonstrate foundational learning skills including active engagement in the learning process

Final exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 8 hours

Due: **TBA**

Weighting: **40%**

The final exam will be held during the Formal Examination Period, and may consist of a mixture of multiple choice and short-length answer questions. The exam will cover all Lecture and Practical material presented in the unit. The University will announce the examination date towards the end of semester. We will relay that date via an announcement in Lectures and via iLearn.

On successful completion you will be able to:

- Define evolution and describe its main mechanisms
 - Define the major evolutionary transitions of organisms on earth
 - Differentiate the main groups of organisms and interpret their evolutionary relationships
 - Contrast major ecological processes and describe biogeographical patterns
 - Synthesise experimental results and information from the scientific literature to prepare a scientific report
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¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

1. Methods of communication Unit staff will communicate with you via email to your university email address or through announcements on iLearn. It is therefore critical that you regularly check your university email inbox. Queries to convenors can either be placed on the iLearn discussion board or sent to biol1310@mq.edu.au from your **university email address**.

2. Lectures Two 1-hour lectures will be available for you to stream and/or download via the unit's iLearn site prior to scheduled lecture times in each week of the teaching session. It is important to follow these lectures across the session because the material is closely linked to the compulsory practical classes and associated assessment tasks.

3. Practicals

Practicals for infrequent attendance students are conducted in two "block" on-campus sessions, plus a third session administered electronically via zoom. The dates for the on-campus sessions are:

Session 1: Saturday 23 March 2024 (covering weekly practicals 1-3)

Session 2: Tuesday 23 and Wednesday 24 April (covering weekly practicals 4-8)

The **third session** will be conducted in Week 12 or 13 (TBA) and will cover weekly practicals 9 & 10.

On-campus sessions are held in three adjoining teaching laboratories at 6 Wally's Walk - rooms 106, 110 and 112.

For safety reasons **fully covered shoes are mandatory** for entry into these laboratories.

All further detail relating to these classes will be communicated via the BIOL13410 iLearn site.

4. COVID-19 Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: <https://www.mq.edu.au/about/coronavirus-faq>. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

Unit Schedule

WEEK	TOPIC	SCHEDULED LECTURES	STAFF
1	Introduction to BIOL1310	1. Welcome & unit information	DK
		2. The diversity of life	DK
2	Life as we know it	3. How did life start on earth?	MG
		4. Major transitions of life	MG
3	Evolution & genetics	5. Darwin's theory of evolution	MG
		6. Basic genetics & the "modern synthesis"	MG
4	Mechanisms of evolution	7. Selection, mutation & gene flow	DK
		8. Sex & recombination	DK
5	Species, speciation & phylogenies	9. The species concept & speciation	DK
		10. Phylogenies	DK
6	Cells	11. Cell structure/function (pro/eukaryote)	MG
		12. Bacterial evolution	MG
7	Unicellular & multicellular organisms	13. Unicellularity to multicellularity	MG
		14. Fungi	MG
8	Plants	15. Plants as multicellular organisms	DK
		16. Plant diversity	DK
9	Animals	17. Evolution of animals	DK

WEEK	TOPIC	SCHEDULED LECTURES	STAFF
		18. Animal diversity	DK
10	Development, life history & reproduction	19. Development & life history	DK
		20. Reproduction	DK
11	Behaviour & plant-animal interactions	21. Animal (and plant) behaviour	TBA
		22. Plant-animal interactions	TBA
12	Ecology & biogeography	23. Ecology I	TBA
		24. Biogeography	TBA
13	Population, community & ecosystems ecology	25. Ecology II	TBA
		26. Ecology III	TBA

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/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

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

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

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the 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

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study

- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

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 from Previous Offering

We value student feedback to be able to continually improve the way we offer our units. As such we encourage students to provide constructive feedback via student surveys, to the teaching staff directly, or via the FSE Student Experience & Feedback link in the iLearn page.

Student feedback from the previous offering of this unit was very positive overall, with students pleased with the clarity around assessment requirements and the level of support from teaching staff. As such, no change to the delivery of the unit is planned, however we will continue to strive to improve the level of support and the level of student engagement.

Unit information based on version 2024.01 of the [Handbook](#)