



BIOL1310

Organisms to Ecosystems

Session 1, In person-scheduled-weekday, North Ryde 2023

School of Natural Sciences

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	3
<u>General Assessment Information</u>	3
<u>Assessment Tasks</u>	4
<u>Delivery and Resources</u>	7
<u>Unit Schedule</u>	9
<u>Policies and Procedures</u>	10

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General Information

Unit convenor and teaching staff

Unit convenor

Darrell Kemp

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Consultation via appointment

Tutorial coordinator

Larissa Trompf

biol1310@mq.edu.au

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Credit points

10

Prerequisites

Corequisites

Co-badged status

BIOX1310

Unit description

This unit introduces students to the essential concepts in current biology. BIOL1310 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. BIOL1310 is designed as a companion unit to BIOL1110 in Session 2.

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 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 of 8 of the 11 scheduled practical classes, and

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

Hurdle assessment: Practical attendance

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 of 8 of the 11 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 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 [Spec](#)

Special Consideration.

Assessments where Late Submissions will be accepted:

Assessment 1 (Research report) – standard late penalty applies.

3. Special Consideration

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.

Written Assessments: If you experience circumstances or events that affect your ability to complete the written assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Weekly practice-based tasks: To pass the unit you need to demonstrate ongoing development of skills and application of knowledge in **8 out of 11 of the weekly practical classes**. If you miss a weekly practical class 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 another class that week.

If it is not possible to attend another class, you should still contact the convenor for access to class material to review in your own time.

Note that Special Consideration should **only be applied for** if you miss more than **three** of the **weekly practical** classes.

4. Assessment Activities and other information

Pre-practical quizzes and the mid-semester test will be administered online via the Biol1310 iLearn site. You will submit your research report via an upload link provided on this site.

Assessment outcomes and feedback will be provided via the 'gradebook' function of the Biol1310 iLearn site.

Assessment Tasks

Name	Weighting	Hurdle	Due
Research Report	30%	No	Week 8
Pre-practical Quizzes	10%	No	Weekly prior to practical
Final Exam	40%	No	TBA
Mid-semester test	15%	No	03/04/2023

Name	Weighting	Hurdle	Due
<u>Weekly practical class</u>	5%	Yes	Weekly

Research Report

Assessment Type ¹: Report

Indicative Time on Task ²: 20 hours

Due: **Week 8**

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 the marking rubric. Note that while you will work in a group to conduct the practical, all written work is expected to be your own.

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

Pre-practical Quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 12 hours

Due: **Weekly prior to practical**

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 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

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. 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 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

Mid-semester test

Assessment Type ¹: Examination

Indicative Time on Task ²: 15 hours

Due: **03/04/2023**

Weighting: **15%**

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

On successful completion you will be able to:

- Define evolution and describe its main mechanisms

- Define the 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

Weekly practical class

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 12 hours

Due: **Weekly**

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

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 on the Monday of each week during the teaching session. It is important for students to follow these lectures across the session because the material is closely linked to the compulsory practical classes and associated assessment tasks.

3. Practicals

Weekly practical classes last for up to 2.5 hours and will (mostly) be conducted on campus.

Classes begin in the first week of the teaching session. There are no practical classes in week 7 (owing to Easter) and week 13.

You are expected to attend and participate in weekly practical classes. **Failure to attend at least 8 of the 11 practicals will result in a fail grade irrespective of your overall assessable mark for the unit.**

All classes will be conducted on-campus and with the following timetabled options:

1. Wednesday 2:00 pm
2. Thursday 9:00 am
3. Thursday 11:30 am
4. Thursday 2:00 pm
5. Friday 9:00 am
7. Friday 11:30 am

The classes will be held across three adjoining science teaching laboratories at 6 Wallys Walk: (a) 106 Science Lab, (b) 110 Science Lab, (c) 112 Science Lab.

For reasons of personal safety, **fully enclosed footwear is mandatory for admission into these laboratories.**

Practical schedule for infrequent/OUA students:

Practical classes will be held in block sessions over three days. There are two streams. Students can select to attend either **Stream A** or **Stream B**:

Stream A: 25 March & 18-19 April, on-campus in 06WW-106.

Stream B: 26 March & 20-21 April, on-campus in 06WW-106.

An additional **online** practical will be conducted in Week 11/12 (dates to be communicated in advance via the Biol1310 iLearn site).

4. COVID-19 policy

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-faqs>.

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

Schedule of Lectures:

WEEK	TOPIC	Lecture schedule (<i>Provisional</i>):	STAFF
1	Welcome to Biology/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 genetic principles & the 'modern synthesis'	MG
4	Mechanisms of evolution	7. Mechanisms I. Selection, mutation, gene flow	DK
	(<i>microevolution</i>)	8. Mechanisms II. Sex & recombination	DK
5	Species, speciation & phylogenies	9. The species concept/speciation	DK
	(<i>macroevolution</i>)	10. Phylogenies	DK
6	Cells, prokaryotes & eukaryotes	11. Cellular structure/function: pro/eukaryote	MG
		12. Bacterial evolution	MG
7	Unicellular & multicellular organisms	13. From unicellularity to multicellularity	MG
		14. Fungi	MG
8	Plants	15. Plants as living multicellular organisms	DK
		16. Diversity of plants	DK
9	Animals	17. The evolutionary history of animals	DK
		18. Diversity of animals (largely metazoa)	DK
10	Development, life history & reproduction	19. Development & life history	DK
		20. Reproduction	DK
11	Behaviour & plant/animal interactions	21. Animal & plant behaviour	DK
		22. Plant-animal interactions (& co-evolution)	DK

12	Ecology & Biogeography	23. Ecology I	DK
		24. Biogeography (animal & plant distributions)	DK
13	Pop, community & ecosystems ecology	25. Ecology II	DK
		26. Ecology III	DK

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.