BIOX1310

Organisms to Ecosystems

Session 1, In person-scheduled-infrequent, North Ryde 2025

School of Natural Sciences

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
A/Prof. Darrell Kemp
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NA

Practical super-tutor
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NA
NA

Credit points
10

Prerequisites

Corequisites

Co-badged status

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.

Learning in this unit enhances student understanding of global challenges identified by the United Nations Sustainable Development Goals (UNSDGs) Life Below Water, Life on Land

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 achieve an overall assessment mark equal to or greater than 50%

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 task is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of zero (0) will be awarded even if the assessment task is submitted. The submission time for all uploaded assessment tasks 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, including scheduled exams, performance assessments/ presentations, and/or scheduled practical assessments/labs, please apply for Special consideration.

Assessments where Late Submissions will be accepted: Assessment 2: Research report (35%) – standard late penalty applies.

Macquarie University's **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.

Practice-based work: You will need to demonstrate ongoing development of skills and application of knowledge across the scheduled practical classes (see Delivery and Resources below for the schedule of these classes for OUA students). Participation in the on-campus practical sessions is essential to the learning experience and attendance is therefore

compulsory. If you are likely to miss a class (or session day) due to a serious, unavoidable and significant disruption, contact the unit's tutorial convenor ASAP (via email: biol1310@mq.edu.au) who will arrange for you to attend another class if possible.

3. Assessment activities and other information

You will submit your **assignment** and **lab book** via a link provided on the BIOL/BIOX1310 iLearn site. Assessment outcomes and feedback will be provided to you via the "gradebook" function of the site.

Assessment Tasks

Name	Weighting	Hurdle	Due
Lab book	15%	No	25/04/2025
Research Report	35%	No	16/05/2025
Final exam	50%	No	TBA

Lab book

Assessment Type [1]: Lab book
Indicative Time on Task [2]: 12 hours
Due: **25/04/2025**
Weighting: **15%**

In each practical, you will undertake a range of activities and record your progress in a lab book. This lab book must be submitted after the last practical and will be assessed for completeness

On successful completion you will be able to:

- 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
- Demonstrate foundational learning skills including active engagement in the learning process

Research Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 20 hours

Due: **16/05/2025**
Weighting: **35%**

You will write a short research report on an experiment conducted during 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.

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

Final exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 35 hours
Due: **TBA**
Weighting: **50%**

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 readings, lecture and practical material covered in the unit. The University will announce the examination date and 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 domain address or via 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 emailed 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 prior to scheduled lecture times in each week of the teaching session. These will be accessed via the Echo360 platform accessible through the unit's iLearn site. It is important to follow the lectures closely throughout the session because the material is closely linked to the practical classes and associated assessment tasks.

3. Practical classes are run over three separate "intensive" sessions, scheduled as below:

1. **Session 1:** Saturday 22 March 2025 - **ON-CAMPUS** at Macquarie University
2. **Session 2:** Wednesday 23 & Thursday 24 April 2025 - **ON-CAMPUS** at Macquarie University
3. **Session 3:** Saturday 31 May 2025 – remote/online via ZOOM

On-campus sessions will generally run from 10am to 5pm (including breaks), and are held in three adjoining teaching laboratories at 6 Wally's Walk rooms 106, 110 and 112.

Unit Schedule

LECTURE SCHEDULE:

Lecture 1: **Unit introduction/outline**

Lecture 2: **Diversiry of life**

Lecture 3: **Origin of life**

Lecture 4: **Evolutionary transitions**

Lecture 5: **Cells: prokaryotic and eukaryotic**

Lecture 6: **Energetics: making a living**

Lecture 7: **Darwinian evolution**

Lecture 8: **Basic genetic principles**

Lecture 9: **Mechanisms of evolution I**

Lecture 10: **Mechanisms of evolution II**

Lecture 11: **Species and speciation**

Lecture 12: **Phylogenies**

Lecture 13: **Symbioses: relationships among organisms**

Lecture 14: **Fungal diversity and biology**

Lecture 15: **Plant evolution, diversity and biology I**

Lecture 16: **Plant evolution, diversity and biology II**

Lecture 17: **Animal evolution, diversity and biology I**

Lecture 18: **Animal evolution, diversity and biology II**

Lecture 19: **Organism development and life history**

Lecture 20: **Reproduction**

Lecture 21: **Animal behaviour and behavioural ecology**

Lecture 22: **Plant-animal interactions**

Lecture 23: **Biogeography**

Lecture 24: **Ecology I - population ecology**

Lecture 25: **Ecology II - community ecology**

Lecture 26: **Ecology III - ecosystems ecology**

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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 connect.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/

Academic Success

Academic Success 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 the Service Connect Portal, 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

Macquarie University educators value the feedback obtained from students and draw upon it 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. Students in previous offerings of BIOL/BIOX1310 have overall reported very positive experiences, with praise for the clarity around assessment requirements and the level of support given by teaching staff.

The 2025 offering of BIOL/BIOX1310 has been modified for compliance with new assessment principles which mandate that units have no more than three (3) different assessment tasks spread out reasonably across the teaching session. Interested students can consult the unit convenor for further details relating to this variation.

Unit information based on version 2025.04 of the Handbook