BIOL2410

Ecology

Session 2, In person-scheduled-weekday, North Ryde 2026

School of Natural Sciences

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
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Credit points
10

Prerequisites
50cp including 20cp from (BIOL1310 or BIOL1110 or ENVS1017 or EESC1160) and (STAT1170 or STAT1371)

Corequisites

Co-badged status
BIOL6410

Unit description
Ecology is the study of the distribution and abundance of organisms and of the processes that generate these patterns. This unit covers basic ecological concepts at the level of organisms, populations, communities, and ecosystems. We study how interactions among organisms - and between organisms and their physical environment - shape the natural world. This unit also addresses how ecological concepts can be applied to current issues such as climate change, conservation, fisheries and agriculture. A first year Statistics unit is a prerequisite for this unit because we use both descriptive statistics and statistical tests to investigate community structure, population dynamics and how organisms interact with the environment. Note that this unit has several short fieldtrips, such as to the MQ Ecology Reserve near Lane Cove National Park.

Learning in this unit enhances student understanding of global challenges identified by the United Nations Sustainable Development Goals (UNSDGs) Climate Action; 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: Describe and analyse how interactions between organisms, and between organisms and the environment, influence population, community and ecosystem patterns

ULO2: Critically evaluate and compare ecological concepts and principles, and apply these to find solutions to contemporary environmental issues

ULO3: Carry out and correctly interpret a range of equations and statistical tests to measure characteristics of populations and communities

ULO4: Develop testable hypotheses to assess ecological patterns and processes, and design comparative experiments to test these

ULO5: Demonstrate knowledge of professional responsibility and safe working practices whilst undertaking field work

ULO6: Develop a scientific report to communicate a study you have undertaken, demonstrating appropriate linkages to scientific literature and ecological theory

General Assessment Information

This unit cannot be completed entirely online. All students must attend some face-to-face classes.

To pass this unit you must

- Attempt all assessments,
- Achieve a total mark equal to or greater than 50%,

Assignment submission

The Powerpoint slides for the oral presentation are to be uploaded to iLearn via the assignment submission box and the Practical Report via the TURNITIN link by 11:55 pm on the due date. TURNITIN is a powerful online tool for the detection of plagiarism. It works by comparing the text of a submitted document (i.e., your assignment) with the work of your current classmates, past students in Ecology and other courses at Macquarie, as well as published material in books, journals and on the web.

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 or missed attendance of time-sensitive tasks, such as scheduled tests/ exams, assessments/presentations, and/or scheduled field trips, students need to submit an application for Special Consideration.

Assessments where Late Submissions will be accepted

Practical report – YES, Standard Late Penalty applies

Oral Presentation, Final exam - NO, unless Special Consideration is Granted

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

Practical Report (35%)

In a small group during the week 7 and 8 pracs you will design and undertake in the Ecology Reserve near campus an independent field-based project comparing species traits, abundance and/or community structure across an environmental gradient of your choosing. Students will individually write this up in the style of a scientific paper for the journal Austral Ecology. This task is designed to assess your understanding of ecological concepts, limitations associated with fieldwork, how to source and utilise appropriate scientific literature to craft an argument, and scientific communication conventions. The word limit for this report is 1500 words (excluding Abstract, Acknowledgement and References). Any text beyond 1500 words will not be read by the markers; shorter submissions are acceptable. Further details can be found in the Field Trip practical notes (on iLearn). **A marking rubric is provided on iLearn, as well as a template for completing your report and examples of previous studies.** Please consult these when preparing your report.

Presentation (15%)

You will prepare a 6 minute presentation on a topic of your choosing, related to the application of ecology to real-world issues. The purpose of this is to demonstrate your understanding of how ecological concepts can be applied to understand and solve real-world problems, and your ability to communicate scientific issues to a lay audience. **You can choose a topic from the list provided in ilearn, or come up with your own based on the guidelines provided.** You will deliver your presentation in the week 10 and 11 prac sessions. All students must upload Powerpoint slides to ilearn by **11:55 pm Fri 9 Oct**. Late submission of slides without approved Special Consideration will attract a penalty as per the assessment policy. **A marking rubric is provided on iLearn.** Please consult this when developing your presentation.

Examination (50%)

The final exam will be held during the Semester 2 Exam Period and will be 2 hr (plus 10 min reading time). This will be an in-person, invigilated exam. Please consult the University Handbook to determine the commencement and finishing dates of the compulsory exam period. You will be permitted to take a non-programmable calculator and/or English language dictionary into the exam. Notes will not be permitted.

The exam questions have been carefully written to test understanding, not rote learning:

- You will NOT be required to regurgitate definitions or the details of case studies we have discussed in class;
- You WILL need to be able to apply ecological principles to solve real-world problems.

Specifically, the exam (out of 70) will be comprised of three sections:

(A) a multiple choice section where you will be asked to interpret figures and tables and synthesise information (20 questions, 1 mark each; to give 20 possible marks);

(B) a short answer section where you will be asked to solve problems by integrating ecological concepts you have learnt during the unit (6 questions, 5 marks each, to give 30 possible marks);

(C) longer response questions where you will use your ecological knowledge to address applied (conservation/health/management) problems (2 questions, 10 marks each, to give 20 possible marks)

Assessment Tasks

Name	Weighting	Hurdle	Due	Groupwork/Individual	Short Extension	AI Approach
Practical Report	35%	No	05/10/2026	Individual	Yes	Open
Oral-based presentation	15%	No	Slides due Fri 9th Oct; presentations Week 10 and 11 pracs	Individual	No	Observed
Final Exam	50%	No	November exam period (TBA)	Individual	No	Observed

Practical Report

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 35 hours
Due: **05/10/2026**
Weighting: **35%**
Groupwork/Individual: Individual
Short extension [3]: Yes

AI Approach: Open

You will write a scientific report, in the format of a paper for the journal Austral Ecology, describing one of the practical experiments, and discussing principles of fieldwork.

On successful completion you will be able to:

- Describe and analyse how interactions between organisms, and between organisms and the environment, influence population, community and ecosystem patterns
- Carry out and correctly interpret a range of equations and statistical tests to measure characteristics of populations and communities
- Develop testable hypotheses to assess ecological patterns and processes, and design comparative experiments to test these
- Demonstrate knowledge of professional responsibility and safe working practices whilst undertaking field work
- Develop a scientific report to communicate a study you have undertaken, demonstrating appropriate linkages to scientific literature and ecological theory

Oral-based presentation

Assessment Type [1]: Presentation task
Indicative Time on Task [2]: 16 hours
Due: **Slides due Fri 9th Oct; presentations Week 10 and 11 pracs**
Weighting: **15%**
Groupwork/Individual: Individual
Short extension [3]: No
AI Approach: Observed

You will give a short presentation on a key topic in ecology

On successful completion you will be able to:

- Describe and analyse how interactions between organisms, and between organisms and the environment, influence population, community and ecosystem patterns
- Critically evaluate and compare ecological concepts and principles, and apply these to find solutions to contemporary environmental issues

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 2 hours
Due: **November exam period (TBA)**
Weighting: **50%**
Groupwork/Individual: Individual
Short extension [3]: No

AI Approach: Observed

You will undertake a final examination during the formal examination period.

On successful completion you will be able to:

- Describe and analyse how interactions between organisms, and between organisms and the environment, influence population, community and ecosystem patterns
- Critically evaluate and compare ecological concepts and principles, and apply these to find solutions to contemporary environmental issues
- Carry out and correctly interpret a range of equations and statistical tests to measure characteristics of populations and communities
- Develop testable hypotheses to assess ecological patterns and processes, and design comparative experiments to test these
- Demonstrate knowledge of professional responsibility and safe working practices whilst undertaking field work
- Develop a scientific report to communicate a study you have undertaken, demonstrating appropriate linkages to scientific literature and ecological theory

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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
- Academic Success 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.

[3] An automatic short extension is available for some assessments. Apply through the Service Connect Portal.

Delivery and Resources

Classes

Lectures commence in week 1

The unit consists of 2 online lectures per week and two weekend on-campus sessions

Lectures (commence week 1): Mon 1300 AND Wed 1300, online

Prac classes (commence week 2): Mon 0900-1200, Mon 1400-1700, or Tues 0900-1200 14EaR 120 Science Lab

Required and recommended texts and/or materials

There is no prescribed text book for this course. Instead, I have compiled a collection of media (papers, videos, websites) that directly complement the lectures. These are available via the iLearn site for this unit. It is expected that you review these materials before coming to each lecture.

If you would also like to consult a textbook (this is not compulsory), I suggest:

Begon M, Howarth RW, Townsend CR (2014) Essentials of Ecology. 4th edition. Blackwell Scientific Publications, Cambridge. The 3rd (2008) edition is also acceptable, if you can come by it second hand.

Unit web page

PowerPoint slides, lecture recordings, unit readings, copies of all unit hand-outs and helpful resources for completion of assessments will be available through iLearn. Consequently, it is strongly recommended that you interact with the BIOL2410/6410 online unit regularly. **To access the online unit, go to https://iLearn.mq.edu.au/login/MQ/ and type in your Macquarie OneID Username and password.**

New to iLearn? You can find out more at: https://students.mq.edu.au/support/technology/systems/ilearn

Experiencing difficulties? contact the IT Service Desk at help@mq.edu.au.

Methods of Communication

We will communicate with you via your university email and through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email on iLearn.

Unit Schedule

Lecture timetable

Part 1. Organisms and their environment

WEEK 1

27th July	1. What is ecology, and why does it matter?
29th July	2. Conditions, resources and the niche concept

WEEK 2

3rd August	3. Distributions
5th August	4. Ecological strategies and their evolution

WEEK 3

10th August 5. Population growth and intraspecific competition

Part 2. Interactions among species

12th August 6. Interspecific competition

WEEK 4

17th August 7. Predation and herbivory

19th August 8. Parasitism and disease

WEEK

24th August 9. Facilitation and mutualisms

Part 4. Communities and ecosystems

26th August 10. Community structure

WEEK 6

31st August 11. Community function

2nd September 12. A primer to experimental and sampling design

WEEK 7

7th September 13. Global patterns of productivity

9th September 14. Disturbance and succession

WEEK 8

14th September 15. Island biogeography

16th September 16. Spatial subsidies

MID SEMESTER BREAK

WEEK 9

5th October PUBLIC HOLIDAY

7th October 16. Land- and sea-scape ecology

WEEK 10

12th October 17. The flux of energy through food webs

14th October 18. The flux of matter through food webs

5. Applied ecological issues

WEEK 11

19th October 19. One Health: healthy ecosystems, healthy people

21st October 20. Pest species: invasion biology, biosecurity and management

WEEK 12

26th October	21. Future ecosystems: meeting the challenges of climate change
28th October	22. Ecological impacts and their assessment

WEEK 13

2nd November	23. Nature repair: restoration, reconciliation and nature based solutions
4th November	24. Managed ecosystems: fisheries, aquaculture, forestry, agriculture

Practical classes

For all practical sessions (including Oral Presentations) you must be wearing covered shoes to be allowed entry to the labs and there is strictly no eating or drinking

Week 1 (27-28 July): No prac

Week 2 (3-4 August): Practical induction/censusing deep sea life

Week 3 (10-11 August): Nearest neighbour (field)

Week 4 (17-18 August): Competition (field)

Week 5 (24-25 August): Parasites (lab) with Michelle Power

Week 6 (31 August-1 September): Invertebrate communities (field) with Ajay Narendra

Week 7 (7-8 September): Independent Project Part I (planning; lab/field)

Week 8 (14-15 September): Independent Project Part II (fieldwork; lab/field)

Week 9 (5-6 October): no prac, public holiday on Monday

Week 10 (12-13 October): Oral presentations I (lab)

Week 11 (19-20 October): Oral presentations II (lab)

Week 12 (26-27 October): Ecological impact assessment: seagrass mooring scars (lab)

Week 13 (2-3 November): Enemy release (field)

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.

- Ask a Study Coach
- 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 https://students.mq.edu.au/support/technology/service-desk.

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. To alleviate pressure at the end of the semester, the timing of the Indpendent Project has been moved earlier in semester.

Unit information based on version 2026.05 of the Handbook