



# BIOL227

## Ecology

S2 External 2016

*Dept of Biological Sciences*

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## General Information

Unit convenor and teaching staff

Unit Convenor

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E8C209

by appointment

Katherine McClellan

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Credit points

3

Prerequisites

(6cp from (BIOL114 or BIOL115 or BIOL116 or BIOL121)) or ((BIOL114 or BIOL115 or BIOL116 or BIOL121) and (ENVE117 or ENVS117 or GEOS117))

Corequisites

Co-badged status

BIOL601

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. There is a compulsory field trip to Smiths Lake in the September vacation.

## 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:

Explain how organisms interact with each other and their environment

Analyse how biological interactions influence patterns of distribution and abundance  
Analyse the structure of and changes in populations, communities, and ecosystems  
Apply ecological concepts to novel situations, especially to contemporary issues  
Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.  
Identify and synthesise important ecological principles.  
Develop questions and pose hypotheses about ecological patterns and processes  
Collect and analyse ecological data in order to evaluate hypotheses

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Weekly quizzes</a>	20%	No	weekly
<a href="#">Practical Report &amp; Peer review</a>	25%	No	16 SEPT & 3 OCT
<a href="#">Field Trip Report</a>	25%	No	14 OCT
<a href="#">Final exam</a>	30%	No	S2 exam period

### Weekly quizzes

Due: **weekly**

Weighting: **20%**

Throughout the semester you will do 10 online quizzes (worth 2% each). Quizzes will be made available on Wednesday. Quizzes will be based on lectures and recommended readings. We recommend you do these quizzes weekly to keep up with unit content, but once open, quizzes will remain open until Friday of week 13.

On successful completion you will be able to:

- Explain how organisms interact with each other and their environment
- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues

### Practical Report & Peer review

Due: **16 SEPT & 3 OCT**

Weighting: **25%**

Each student will individually will write up one of the three experiments we complete in class, following guidelines for the journal *Austral Ecology* (Due 16 SEPT, worth 15%, a mean value of

the 4 marks given by your peers). Then in a double blind peer review process you will mark and provide feedback on four (4) reports written by your peers. This is so that you can see the quality of your peers writing, how they express concepts and use this process to reflect, evaluate and improve your own written work (Due 3 OCT worth 10%).

On successful completion you will be able to:

- Explain how organisms interact with each other and their environment
- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.
- Identify and synthesise important ecological principles.
- Develop questions and pose hypotheses about ecological patterns and processes
- Collect and analyse ecological data in order to evaluate hypotheses

## Field Trip Report

Due: **14 OCT**

Weighting: **25%**

In a small group you will make observations and develop hypotheses about *the distribution, abundance and diversity of organisms between habitats* in the native bushland at the field site. You and your group will come up with a sampling design to test your hypothesis, then you will collect and analyse your data. Individually, you will write up your study following guidelines for the journal *Austral Ecology*. Production of the field trip report will build on the written communication skills you have already begun to develop through preparation of the first Practical Report.

On successful completion you will be able to:

- Explain how organisms interact with each other and their environment
- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.
- Identify and synthesise important ecological principles.
- Develop questions and pose hypotheses about ecological patterns and processes
- Collect and analyse ecological data in order to evaluate hypotheses

## Final exam

Due: **S2 exam period**

Weighting: **30%**

You will apply ecological concepts introduced during this course to solve a variety of problems. You will be asked to interpret data of the type collected during this course.

On successful completion you will be able to:

- Explain how organisms interact with each other and their environment
- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.
- Develop questions and pose hypotheses about ecological patterns and processes

## Delivery and Resources

**In order to pass this course, you must a) attempt ALL assessments, regardless of their weighting and b) have demonstrated that you have met all learning outcomes c) and achieve an overall grade of 50% or greater in the unit.**

### Required and recommended texts and/or materials

While there is a text book that some lectures will follow, you do not need to purchase this as a copy will be in special reserve and online.

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.

*Other text books also available in special reserve:*

- Begon M, Harper JL, Townsend CR (1996) *Ecology: individuals, populations and communities*. 3rd Edition. Blackwell Science, Boston.
- Krebs CJ (2001) *Ecology: the experimental analysis of distribution and abundance*. 5<sup>th</sup> Edition. Benjamin Cummings, Publishers, San Francisco, London
- Krebs CJ (2008) *The ecological world view*. 5<sup>th</sup> Edition. CSIRO Publishing, Collingwood
- Ricklefs R, Miller GL (2000) *Ecology*. 4<sup>th</sup> Edition. WH Freeman and Co. New York.
- Underwood AJ (1997) *Experiments in ecology: their logical design and interpretation using analysis of variance*. Cambridge University Press, New York.

## 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 BIOL227 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: [http://www.mq.edu.au/iLearn/student\\_info/](http://www.mq.edu.au/iLearn/student_info/)

**Experiencing difficulties?** Visit: [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/)

## Unit Schedule

The unit consists of 2 lectures per week (available to external students via Echo360) and either

- a 3 hour practical per week (weeks 2-5) for internal students *or*
- a weekend on-campus session for externals

There is a **compulsory** field trip to Stanwell Tops in the September vacation that **all** students enrolled in this unit must attend. **Students who cannot attend the fieldtrip should NOT enrol in this unit.**

- *Lectures:* Monday 5 pm (E7B T3) AND Tuesday 10 am (E7B T4)
- *Practicals (internal students, weeks 2-5 only):* Tues (2-6pm) or Wednesday (9-1 pm, or 2-6 pm)
- *On campus session (external students):* 20-21 August
- *Field trip (compulsory for ALL students):* 21-24 September OR 25-28 September

### **STUDENTS ARE EXPECTED TO PARTICIPATE IN ALL 4 PRAC CLASSES.**

**If you are an internal student and cannot attend a prac you will need to attend the OnCampus session and make note of the Externals due dates.**

**If you are an external student and cannot attend part of the OnCampus session you will either need to attend the internal pracs or contact the unit convenors to arrange a suitable alternative activity to make up the pracs.**

### **Practical classes**

For all practical sessions you must be wearing covered shoes to be allowed entry to the labs and there is strictly no eating or drinking in the labs. In pracs 3-4 you will be walking within the Macquarie University Ecology Reserve to collect data for the group practical. Please dress appropriately with **sturdy walking shoes (no open toed shoes)** and **long pants**. **Those who are not appropriately dressed will not be able to do the prac and will therefore lose the marks allocated to it.** The prac will go ahead **regardless of the weather**, so bring rain gear if the weather looks doubtful.

### *Timetable for internal students*

Week 1	NO PRAC
Week 2	Prac 1: Induction to sampling designs
Week 3	Prac 2: Group Practical 1 – meet at the Ecology Reserve (see lecture 1 for details)
Week 4	Prac 3: Group Practical 2 – meet at the Ecology Reserve (see lecture 1 for details)
Week 5	Prac 4: Group Practical 3 – meet at the Ecology Reserve (see lecture 1 for details)

### *Timetable for external students*

Meet at the E8A labs at 9am we should finish by 4pm

Saturday 20 August	Prac 1:	Induction to sampling designs & Prac 2: Group Practical 1
Sunday 21 August	Pracs 3 & 4:	Group Practicals 3 & 4

## **Policies and Procedures**

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

**New Assessment Policy in effect from Session 2 2016** [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html). For more information visit [http://students.mq.edu.au/events/2016/07/19/new\\_assessment\\_policy\\_in\\_place\\_from\\_session\\_2/](http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/)

Assessment Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/student\\_conduct/](https://students.mq.edu.au/support/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](http://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](http://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/](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

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:



## Learning outcomes

- Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.
- Identify and synthesise important ecological principles.

## 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

- Explain how organisms interact with each other and their environment
- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify and synthesise important ecological principles.
- Develop questions and pose hypotheses about ecological patterns and processes
- Collect and analyse ecological data in order to evaluate hypotheses

## Assessment tasks

- Weekly quizzes
- Practical Report & Peer review
- Field Trip Report
- Final exam

## 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

- Explain how organisms interact with each other and their environment
- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.
- Identify and synthesise important ecological principles.
- Develop questions and pose hypotheses about ecological patterns and processes
- Collect and analyse ecological data in order to evaluate hypotheses

## Assessment tasks

- Weekly quizzes
- Practical Report & Peer review
- Field Trip Report
- Final exam

## 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

- Analyse how biological interactions influence patterns of distribution and abundance
- Analyse the structure of and changes in populations, communities, and ecosystems
- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key concept and conclusions.
- Identify and synthesise important ecological principles.
- Develop questions and pose hypotheses about ecological patterns and processes
- Collect and analyse ecological data in order to evaluate hypotheses

## Assessment tasks

- Weekly quizzes
- Practical Report & Peer review

- Field Trip Report
- Final exam

## 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:

### Assessment tasks

- Practical Report & Peer review
- Field Trip Report

## 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:

### Learning outcomes

- Apply ecological concepts to novel situations, especially to contemporary issues
- Identify and synthesise important ecological principles.

## 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

- Explain how organisms interact with each other and their environment
- Apply ecological concepts to novel situations, especially to contemporary issues
- Collect and analyse ecological data in order to evaluate hypotheses

## Changes from Previous Offering

- New assessments: there is now a peer review component of the prac report assessment.
- The field trip will now take place at The Tops Conference Centre, Stanwell Tops.
- Sign-up for the field trip is fully online. Details of this will be on iLearn. Details of how to pay for the fieldtrip will be provided in the first practical (for internal students) or by email (for external students) and on iLearn.
- The turnitin plagiarism check for the written assessments will be available through iLearn
- There will be 10 weekly quizzes that students must undertake online. These are designed to encourage problem-solving skills, reinforce lecture material and ensure students remain up-to-date. These quizzes will remain open until the last week of semester.
- Pre-prac quizzes & prac booklet are now a part of the prac tasks.

## Changes since First Published

Date	Description
01/08/2016	A typo in the "Unit schedule" section has been corrected - OCS are in August