



# BIOL227

## Ecology

S2 External 2019

*Dept of Biological Sciences*

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### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

### Unit convenor and teaching staff

#### Convenor

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#### Advisor

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### Credit points

3

### Prerequisites

(15cp including [6cp from (BIOL114 or BIOL115 or BIOL116 or BIOL121)] or [3cp from (BIOL114 or BIOL115 or BIOL116 or BIOL121) and 3cp from (ENVE117 or ENVS117 or GEOS117)] and [3cp from (STAT170 or STAT171)])

### 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 for all students in the mid-semester lecture break (20-22 September, OR 22-24 September) and a two day on-campus practical session for external students over a weekend early in the session (10-11 August, end of Week 2). STAT170 (or STAT171) 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. Many students find that the skills they gain taking BIOL235 complements the skills needed in this Ecology unit.

## 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 with the environment.
- Analyse how these 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 findings and use to confirm or refute your own findings.
- 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.

## General Assessment Information

### Expected workload

Each three credit point unit at Macquarie is equivalent to 150 hours of study. In BIOL227, we have broken this down into the following activities.

Activity	Time requirement (hrs)	Weighting (% of overall grade)
Lectures	25	5% for participation

Readings	24	
Practicals	4 x 3 hours	
Fieldtrip	6 x 3 hours	
Review for mid-semester test	10	15%
Pre-prac quiz	3.5	5%
Ecology Reserve Report	14	15%
Fieldtrip Report	18	25%
Final exam	25	35%

## Assignment submission

The written assessments (Practical Report and Field Trip Report) are to be submitted via the appropriate **TURNITIN link on iLearn by 11:59 pm on the due date** (i.e. paper copies of these assessments are NOT required by either internal or external students).

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 BIOL227 and other courses at Macquarie, as well as published material in books, journals and on the web.

## To submit your assignment via turnitin:

1. Visit the *Assessments* tab in iLearn, look for the *turnitin* header and select the relevant assessment item (Practical Report or Field Trip Report)
2. Click on the **Submit Paper** tab.
3. Enter a **Submission Title**.
4. **Select Submission Part if there are multiple parts available.**
5. **Click Browse and select the file you would like to submit.**
6. **Click Add Submission.**

## Academic Honesty

Presenting the work of another person as one's own is a serious breach of the University's rules and carries significant penalties. The University's Academic Integrity Policy can be found at:

<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedure>

### [s/policies/academic-integrity](#)

In this unit, we will be checking written work for plagiarism using TURNITIN. Penalties for plagiarism may include a zero mark for the assignment or in more extreme cases, failure of the unit.

### **Extensions, penalties and Special Consideration**

Late assignments will attract a penalty of **-10%** of the total marks allocated to the exercise per day.

You may hand in your work after the due date and escape penalty only if you have an acceptable reason (usually a medical certificate). Discuss your problem with the Lecturer as early as possible before the due date.

Information about the Special Considerations policy and procedure is online at Policy Central: <https://staff.mq.edu.au/work4/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

All requests for Special Consideration should be submitted using the online form: [ask.mq.edu.au](https://ask.mq.edu.au)

### **Final exam**

If you receive [special consideration](#) for the final exam, a supplementary exam will be scheduled in December. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

### **Return of Assessment Tasks**

Marked assignments and feedback will be available online through the turnitin submission link 2-3 weeks after assignment submission.

### **Grading**

**In order to pass this unit you must (a) sign up to the Stanwell Tops fieldtrip by the due date, (b) attend the fieldtrip to Stanwell Tops, (c) attend 75% of pracs in addition to the mid-semester test, and (d) attain an overall grade of 50% or more.**

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Lecture participation</a>	5%	No	Weekly
<a href="#">Pre-prac quizzes</a>	5%	No	Weeks 2 and 4
<a href="#">Sign-up for Stanwell Tops</a>	0%	Yes	22 August, 11:59 pm
<a href="#">Mid-semester Test</a>	15%	Yes	Week 7
<a href="#">Ecology Reserve Report</a>	15%	No	21 September 2018
<a href="#">Field Trip Report</a>	25%	Yes	Week 11, 22 October 2018
<a href="#">Final Exam</a>	35%	Yes	Examination period

### Lecture participation

Due: **Weekly**

Weighting: **5%**

During each lecture a few of questions will be asked using the Echo 360 ALP in iLearn. Students will need to respond during class on their smart device (laptop, tablet or smart phone after downloading the Echo 360 ALP mobile app.). For this to work you must log the BIOI227/601 iLearn unit and click on the Echo 360 ALP once to link your profile with this class (if you don't have a device talk to the unit convenor). Students enrolled internally are expected to attend lectures OR live-stream. If this is not possible, students are expected to enroll as external students. External students will be expected to undertake lectures by the end of the week that the lecture was given in (i.e 11:59pm on Sundays).

On successful completion you will be able to:

- Explain how organisms interact with each other and with the environment.
- Analyse how these 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.

### Pre-prac quizzes

Due: **Weeks 2 and 4**

Weighting: **5%**

Pre-prac quizzes will involve reading material, thinking about hypotheses to be tested and experimental designs. The purpose of this is to provide you with appropriate background to

undertake the prac, so we can “get stuck in” straight away. Pre-Prac Quizzes will close as soon as your registered prac class begins. You should be expected to spend approximately 1.5 hours on this activity, prior to the pracs for Weeks 2 and 4. Note that your first written assessment will be based on one of these two field-based activities.

On successful completion you will be able to:

- Develop questions and pose hypotheses about ecological patterns and processes.
- Collect and analyse ecological data in order to evaluate hypotheses.

## Sign-up for Stanwell Tops

Due: **22 August, 11:59 pm**

Weighting: **0%**

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

The fieldtrip to Stanwell Tops is compulsory. Students can elect to attend EITHER the trip spanning 20-22 September OR 22-24 September. Students will be required to spend the duration of the fieldtrip at the Conference Centre. All students must sign up by the due date. Failure to do so will result in the student being assumed to have withdrawn from the unit.

On successful completion you will be able to:

- Collect and analyse ecological data in order to evaluate hypotheses.

## Mid-semester Test

Due: **Week 7**

Weighting: **15%**

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

An in-class, open book test will be held in the practical classes in Week 7. This will be based on lecture material AND recommended readings from Weeks 1-6. The test will be multiple choice and will include numerical exercises similar to those taught in lectures. Questions will be randomly allocated to students. This test will run for 50 minutes in duration. **Internal students must be physically present in the practical class in which they are enrolled**, and will be given a password in class to access the test. **External students will be given different access based on their external enrolment and must complete the test between 5pm and 11:59pm on Wednesday 11 September. All students must attempt this test to pass the unit.**

On successful completion you will be able to:

- Explain how organisms interact with each other and with the environment.
- Analyse how these interactions influence patterns of distribution and abundance.
- Analyse the structure of and changes in populations, communities, and ecosystems.

- Identify and synthesise important ecological principles.

## Ecology Reserve Report

Due: **21 September 2018**

Weighting: **15%**

The prac from either Week 2 or 4 (i.e. Species Richness or Species Interactions) will be written up as an individual report. The report (max 1000 words **excluding Abstract, Acknowledgements and References**) is to be in the style of the journal *Austral Ecology*. The journal has formatting instructions that must be followed throughout. These can be found at the bottom of the instructions for authors, on the journal web-site: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1442-9993/homepage/ForAuthors.html](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1442-9993/homepage/ForAuthors.html). Specifics on the marking scheme and formatting can be found on iLearn. This activity should require 14 hours of work.

On successful completion you will be able to:

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- Apply ecological concepts to novel situations, especially to contemporary issues.
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key findings and use to confirm or refute your own findings.
- 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: **Week 11, 22 October 2018**

Weighting: **25%**

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

The second report will communicate the results of the independent research project conducted on the Stanwell Tops field trip. The word-limit for this second report, which will also be formatted as an *Austral Ecology* manuscript, is 1500 words (**again excluding Abstract, Acknowledgements and References**). Further details can be found in the Field Trip practical notes (which will be posted on iLearn). This activity should require 18 hours of work. All students must submit this assessment to pass the unit.

On successful completion you will be able to:

- Explain how organisms interact with each other and with the environment.
- Analyse how these 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 findings and use to confirm or refute your own findings.
- 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: **Examination period**

Weighting: **35%**

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

The final exam (worth 35% of your mark) will be held during the Semester 2 Exam Period and will be 2 hr (plus 10 min reading time). 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 will focus on material from Weeks 7-13, but short answer questions may also require knowledge of subject matter from Weeks 1-6. All students must attempt the final exam to pass this unit.

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, often this will involve combining concepts from several lectures to solve a problem.

If you receive [special consideration](#) for the final exam, a supplementary exam will be scheduled in December. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

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- 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.

## Delivery and Resources

### Unit web page

Lecture slides and recordings (accessible through the APL Echo 360 block), unit readings, copies of all unit hand-outs and helpful resources for completion of assessments will be available electronically, through iLearn. Consequently, it is strongly recommended that you interact with the BIOL227/601 iLearn site unit at least weekly. 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 technical 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/)

### Text books

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 Schedule

**Lecture timetable \*\*\*NB: All internal students are expected to attend or live-stream every lecture.**

Week	Date	Lecture	Topic	Lecturer	Prac
<i>Part 1: Ecological Methods and Organisms and their environment</i>					
1	29-Jul	1	Ecology: what is it and how is it done?	MG	None
	30-Jul	2	Conditions, resources and the niche concept	MG	
2	5-Aug	3	Distributions	MG	Niches
	6-Aug	4	Global patterns of productivity	MG	
3	12-Aug	5	Effects of environment on life history	MG	Richness
	13-Aug	6	Describing community structure: diversity and species richness	MG	
<i>Part 2: Communities and ecosystems</i>					
4	19-Aug	7	The more the merrier: why biodiversity matters	KM	Population growth
	20-Aug	8	Population growth and intraspecific competition	MG	
<i>Part 3: Interactions among species</i>					
5	26-Aug	9	Interspecific competition	MG	Pairwise interactions
	27-Aug	10	Predation	MG	
6	2-Sep	11	Parasitism and disease	MG	None
	3-Sep	12	An introduction to ecological field sampling	MG	
7	9-Sep	13	Stanwell Tops: Introduction to Field Trip	MG	Mid-semester test
	10-Sep	14	Mid semester test	MG/LB	
<i>Semester Break &amp; Stanwell Tops Field Trip</i>					<i>Fieldtrip</i>
8	30-Sep	15	Facilitation	MG	None

	1-Oct	16	Processes influencing community structure: disturbance and succession	KM	
9	7-Oct	17	Processes influencing community structure: island biogeography	KM	None
	8-Oct	18	The flux of energy through food webs i	KM	
10	14-Oct	19	The flux of energy through food webs ii	KM	None
	15-Oct	20	Spatial subsidies: another time, another place	KM	
<i>Part 4. Applied ecological issues</i>					
11	21-Oct	21	Ecological impact assessment	KM	None
	22-Oct	22	Restoration ecology	KM	
12	28-Oct	23	Invasive species and their management	KM	None
	29-Oct	24	Managed ecosystems: agriculture, fisheries and forestry	KM	
13	4-Nov	25	Global climate change	LB	None
	5-Nov	26	Exam discussion, revision, 300-level unit information	MG & KM	

MG: Dr Matthew Greenlees

LB: Assoc Prof Linda Beaumont

KM: Dr Katherine McClellan

## Learning and Teaching Activities

### Teaching and learning strategy

Ecology is an evolving science, with theories constantly being developed, tested and refined. The knowledge and practical skills that are derived from the study of ecology can be used to help understand and solve some of the most pressing environmental issues of our era. Consequently, in this unit the emphasis will not be on rote-learning 'facts' but on developing the ecological problem-solving skills required to better understand and manage natural resources. In the lectures you will be introduced to some of the tools that you will need for this problem solving. In the practicals you will be required to integrate these skills to define your own research questions and develop the methods required to test them. By the end of the unit, you will have the satisfaction of having completed your own independent project as a real ecologist. We will endeavour to make the lectures as interactive as possible, supplementing them with in-class

activities. We encourage you to interact with the material as much as possible and participate actively as this will maximise your learning. For several assignments in this course, it may be helpful (or required) to work with other students and we encourage you to do so. However, you are responsible for the ownership of your work, and we will take cases of plagiarism very seriously.

## Compulsory Practical Classes

Internal students: Practicals in weeks 2-5, and week 7 only. External students: On-campus weekend 10-11 August (end of Week 2) from 9am-4pm. ALL STUDENTS ARE EXPECTED TO ATTEND ALL PRACTICALS. If you cannot make your assigned prac due to an extenuating circumstance (1) let us know immediately, (2) attend a make up prac (i.e. Internals students will need to attend the OCS, and external students will need to make up the prac by attending an internal prac slot). Note that for internal students, the mid-semester test will be held within their allotted prac class.

## Compulsory Field Trip to Stanwell Tops

We will run two fieldtrips in September to The Tops Conference Centre, Stanwell Tops. Attendance at ONE of these is compulsory. The dates are 20-22 OR 22-24 September. All students will stay at the conference centre. The cost of the excursion will be \$200, which covers all food and accommodation. This amount will be due by Friday 24 August (end of Week 4). Should a student have difficulty paying for the fieldtrip, please see the unit convenor ASAP to discuss alternative arrangements. Signing up to the fieldtrip BY THE DUE DATE is a hurdle assessment. We will assume that any student who does NOT sign up in time is withdrawing from the unit. Attending this fieldtrip is a hurdle assessment, i.e. students must attend the field trip, participate in all activities and submit the associated written assessment to pass the unit. Students who cannot attend the fieldtrip should NOT enrol in this unit. Should circumstances arise that mean a student cannot attend the trip, the student will have to withdraw from the unit.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4*

*December 2017 and replaces the Disruption to Studies Policy.)*

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

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@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](https://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](https://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/](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

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

### Learning outcomes

- Apply ecological concepts to novel situations, especially to contemporary issues.
- Develop questions and pose hypotheses about ecological patterns and processes.

### Assessment tasks

- Pre-prac quizzes
- Ecology Reserve Report
- Field Trip Report
- Final Exam

### Learning and teaching activities

- Ecology is an evolving science, with theories constantly being developed, tested and refined. The knowledge and practical skills that are derived from the study of ecology can be used to help understand and solve some of the most pressing environmental issues of our era. Consequently, in this unit the emphasis will not be on rote-learning 'facts' but on developing the ecological problem-solving skills required to better understand and manage natural resources. In the lectures you will be introduced to some of the tools that you will need for this problem solving. In the practicals you will be required to integrate these skills to define your own research questions and develop the methods required to test them. By the end of the unit, you will have the satisfaction of having completed your own independent project as a real ecologist. We will endeavour to make the lectures as interactive as possible, supplementing them with in-class activities. We encourage you to interact with the material as much as possible and participate actively as this will maximise your learning. For several assignments in this course, it may be helpful (or required) to work with other students and we encourage you to do so. However, you are responsible for the ownership of your work, and we will take cases of plagiarism very



seriously.

- We will run two fieldtrips in September to The Tops Conference Centre, Stanwell Tops. Attendance at ONE of these is compulsory. The dates are 20-22 OR 22-24 September. All students will stay at the conference centre. The cost of the excursion will be \$200, which covers all food and accommodation. This amount will be due by Friday 24 August (end of Week 4). Should a student have difficulty paying for the fieldtrip, please see the unit convenor ASAP to discuss alternative arrangements. Signing up to the fieldtrip BY THE DUE DATE is a hurdle assessment. We will assume that any student who does NOT sign up in time is withdrawing from the unit. Attending this fieldtrip is a hurdle assessment, i.e. students must attend the field trip, participate in all activities and submit the associated written assessment to pass the unit. Students who cannot attend the fieldtrip should NOT enrol in this unit. Should circumstances arise that mean a student cannot attend the trip, the student will have to withdraw from the unit.

## 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:

### Assessment task

- Lecture participation

### Learning and teaching activity

- Ecology is an evolving science, with theories constantly being developed, tested and refined. The knowledge and practical skills that are derived from the study of ecology can be used to help understand and solve some of the most pressing environmental issues of our era. Consequently, in this unit the emphasis will not be on rote-learning 'facts' but on developing the ecological problem-solving skills required to better understand and manage natural resources. In the lectures you will be introduced to some of the tools that you will need for this problem solving. In the practicals you will be required to integrate these skills to define your own research questions and develop the methods required to test them. By the end of the unit, you will have the satisfaction of having completed your own independent project as a real ecologist. We will endeavour to make the lectures as interactive as possible, supplementing them with in-class activities. We encourage you to interact with the material as much as possible and participate actively as this will



maximise your learning. For several assignments in this course, it may be helpful (or required) to work with other students and we encourage you to do so. However, you are responsible for the ownership of your work, and we will take cases of plagiarism very seriously.

## Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

### Assessment tasks

- Lecture participation
- Sign-up for Stanwell Tops

### Learning and teaching activities

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## 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 with the environment.
- Analyse how these 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 findings and use to confirm or refute your own findings.
- 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

- Lecture participation
- Pre-prac quizzes
- Mid-semester Test
- Ecology Reserve Report
- Field Trip Report
- Final Exam

## Learning and teaching activities

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## 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

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- Analyse how these interactions influence patterns of distribution and abundance.
- Analyse the structure of and changes in populations, communities, and ecosystems.
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cannot attend the trip, the student will have to withdraw from the unit.

## 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

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- Identify appropriate scientific journal articles, and critically evaluate and synthesise key findings and use to confirm or refute your own findings.
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## 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:

## Learning outcomes

- Apply ecological concepts to novel situations, especially to contemporary issues.
- Identify appropriate scientific journal articles, and critically evaluate and synthesise key findings and use to confirm or refute your own findings.



- Identify and synthesise important ecological principles.
- Collect and analyse ecological data in order to evaluate hypotheses.

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## 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

- Analyse the structure of and changes in populations, communities, and ecosystems.
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## 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

- 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.

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## Changes from Previous Offering

- We will offer a choice of one of two fieldtrips to Stanwell Tops this year. Students must attend one of these. Sign-up for the field trip is fully online. Please register through eStudent. **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 mid-semester test will be undertaken during the prac classes in Week 7. External students must do the test online Wednesday of Week 7.