UNSW Course Outline

BIOS3061 Plant Ecology - 2024

Published on the 20 May 2024

General Course Information

Course Code : BIOS3061
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Biological, Earth and Environmental Sciences
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Plant ecology is a course where students will explore and challenge key concepts in ecology. Students will also conduct their own research in ecology. The course is not lecture based – rather, weekly meetings will be based on class discussions facilitated by the lecturers. We focus on training students on critical thinking and communicating ideas. Topics include: plant-animal

interactions, biological invasions, the effects of human disturbances on communities, plant reproduction and regeneration, and the evolution of ecological strategies. We incorporate evolutionary, population and community approaches to ecology, and include examples from Australia and around the world. While the focus of much of the course is on plants, the concepts we explore extend to all organisms.

A five-day field excursion during the mid-session break is compulsory and will involve expense to individual students.

Course Aims

The course aims to explore key concepts in ecology, with emphasis on the ecology of plants. The teaching and assessment are designed for students to be engaged in the weekly discussion groups and run independent research projects as part of a field trip.

Relationship to Other Courses

This course builds on knowledge of ecological theory gained in 100 and 200 level courses in ecology/biology. The critical thinking skills and communication skills you build in Plant Ecology will be beneficial for all your courses.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Assess and evaluate published scientific research and ecological theory.
CLO2 : Identify and critique important research directions in plant ecology.
CLO3 : Develop and conduct a research project in plant ecology.
CLO4 : Communicate scientific information in oral and written formats.

Course Learning Outcomes	Assessment Item
CLO1 : Assess and evaluate published scientific research and ecological theory.	• Review Paper • End of session test • Quizzes on readings
CLO2 : Identify and critique important research directions in plant ecology.	• Research project • Review Paper • Quizzes on readings
CLO3 : Develop and conduct a research project in plant ecology.	• Research project
CLO4 : Communicate scientific information in oral and written formats.	• Review Paper • Research project

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Learning and teaching activities

Learning and teaching in plant ecology will focus on student driven research. Weekly discussion groups will allow students to explore ideas and explain viewpoints. Discussion groups will require students to engage with current research in plant ecology.

Independent research projects will be conducted during a field trip to Glenrock Scout Camp. Open labs before the data are collected will provide students extra support in developing research ideas. Similarly, open labs after the data have been collected will provide students support in analysis and interpretation of their data.

The assessments are designed to promote progress in research, an understanding of current plant ecological research, and to build a foundation of skills associated with being a research scientist.

Expectations of students

Class attendance is expected, in person. Student participation in discussion groups cannot be replaced by listening to recorded classes (listening to others discuss ideas is not the same as discussing ideas yourself). Students whose attendance at classes is affected by illness, obligatory religious ceremonies, or other commitments (representing the university, military service etc.) should discuss ways of dealing with this clash with Prof. Moles.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Review Paper Assessment Format: Individual Short Extension: Yes (3 days)	25%	Start Date: 29/05/2024 11:00 AM Due Date: 21/06/2024 09:00 PM
Research project Assessment Format: Individual Short Extension: Yes (3 days)	45%	Start Date: 29/05/2024 09:00 AM Due Date: 26/07/2024 09:00 PM
End of session test Assessment Format: Individual	10%	Start Date: 02/08/2024 02:00 PM Due Date: 02/08/2024 04:00 PM
Quizzes on readings Assessment Format: Individual	20%	Start Date: Not Applicable Due Date: Not Applicable

Assessment Details

Review Paper

Assessment Overview

The review paper will give you experience in synthesising information and ideas from the ecological literature, and presenting this information in the form of a review. You will select one of the research topics explored in the weekly discussion groups. The lecturers will work with you to help explore the literature.

The review is due in week 4. Feedback will be provided 2 weeks after submission.

Course Learning Outcomes

- CLO1 : Assess and evaluate published scientific research and ecological theory.
- CLO2 : Identify and critique important research directions in plant ecology.
- CLO4 : Communicate scientific information in oral and written formats.

Detailed Assessment Description

We want you to choose one of the 14 discussion topics to investigate further. The aim of the review paper is to give you experience of synthesising information and ideas from the current ecological literature, and presenting this information in the form of a review, formatted for publication in *Annals of Botany*.

You should start by reading all the suggested readings for your topic (see plant ecology discussion topics document in Moodle). However, you will also need to use literature searches to find more relevant papers. You are writing a review that synthesises information from different

papers on your selected topic, not summarising/commenting on a single paper.

Follow the *Annals of Botany* author guidelines as if you were going to submit the paper. You will find these at: https://academic.oup.com/aob/pages/General_Instructions. Please ignore their advice about article length – and you do not need to prepare a cover letter. Your paper should not exceed 1500 words in length (including in-text citations but not the reference list at the end of the paper), plus a 200-word abstract (that is, a **total of 1700 words, plus references**).

You need to include a **conceptual figure**. This needs to be something that you have made (don't just paste in someone else's figure), and it should bring together ideas from different papers and/or provide a new perspective/idea on your selected topic. It should be a figure not a table, and should have an accompanying figure legend.

Include a **word count, double-space** your assignment, and use a **12-point font** with reasonable margins.

Citing relevant literature

You need to read and cite *at least* 10 (preferably more) different scientific papers on your topic. Make sure that your sources are from peer-reviewed scientific journals, or scientific books. The best place to find these papers is ISI Web of Science – and Plant Ecology includes library training for formal searches of the published literature.

Assessment Length

total of 1700 words, plus references and a figure

Submission notes

To be submitted via Moodle

Assessment information

The assessment criteria are:

Depth of understanding of literature (35 marks)

- Shows evidence of having read and understood the example readings and other key readings in the field.
- Synthesised information from a wide range of sources (ie didn't just report what each paper said, but integrated information and ideas from multiple papers to provide a cohesive picture of the field).

Critical thinking (30 marks)

- Identified the big questions and **critically evaluated major trends/patterns and controversies in the field.**
- Shows evidence of independent critical thought and own ideas about topic (e.g. uses evidence and logic to decide which side of a debate/controversy seems most likely to be correct).
- Identifies likely productive future directions

Good scientific writing/presentation (25 marks)

- Good abstract (summarises the main ideas/conclusions of the paper, while making the reader want to know the full story, < 200>
- Logical structure, appropriate form for a review paper in *Annals of Botany*.
- Written in concise, grammatically correct sentences without spelling or punctuation mistakes, and with appropriate use of paragraphs.
- Written in an engaging style that holds the reader's interest.
- Statements backed up with appropriate references (in an appropriate form) throughout the text.
- Appropriate length (marks will be deducted for over-long assignments, or for failing to disclose the word count).
- Reference list presented in a style appropriate for *Annals of Botany*.

Conceptual figure (10 marks)

- Clear figure that brings together important information/ideas.
- Good graphic design – e.g. appropriate font size, colours that are suitable for colour-blind readers.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Research project

Assessment Overview

You will carry out your own research project, and give you first had experience of plant ecological field work. During the field trip, you will conduct a research project testing ecological hypotheses. You will present your research with your peers at the end of the field trip to receive ungraded feedback on the study, including ideas for analysis and interpretation. After the field trip, you will individually analyse and interpret your data, and prepare a research paper. You will be assessed on the quality of your individual research papers written in the format of a top ecological journal.

The research paper is due in week 10. Written feedback will be provided within 2 weeks.

Course Learning Outcomes

- CLO2 : Identify and critique important research directions in plant ecology.
- CLO3 : Develop and conduct a research project in plant ecology.
- CLO4 : Communicate scientific information in oral and written formats.

Detailed Assessment Description

THE PROJECT

The aim of this project is to give you experience of designing and carrying out your own research project, and to give you more first-hand experience of plant ecological field work. You design the experiment and collect data as part of a group (necessary for safety, and to allow you to collect a good dataset), but your data analysis and write up is individual work.

Group size

Work in groups of 5 (some groups may have to have 4, depending on how many enrolments we have). Form your own group.

What sort of thing can you do?

You may work on virtually any aspect of plant ecology. Find something that inspires you! There will not be a list of projects to choose from - you will be expected to come up with your own idea (coming up with excellent, interesting ideas is one of the most important parts of being a good scientist – and besides, it's more fun if you're working on something that you really care about).

Equipment

You will need to provide us with a list of the equipment you need us to provide for your field work (tape measures, metre rules, plastic bags etc) by the prac class two weeks before the trip runs. If your project idea requires specialised equipment, come and talk to us as early as possible and we will see if we can find it for you (of course, our resources are not unlimited!). You will be given your equipment in the prac class the week before the trip runs, and will be expected to bring it on the trip with you. You will return the equipment on the last day of the trip.

Scope of project

You will have four days in the field to collect data, enter data, do some preliminary analyses and make a presentation for the class. So, you need to be realistic about how much you can get done. It is better to tackle a small project well than to do a bad job of something ridiculously big.

If you do an excellent job of a manageable, interesting question, you might even be able to publish your work in a scientific journal. Make sure you use your time in the field well – we will not be terribly impressed if you collect some data in one afternoon and spend the rest of your time at the beach!

Your project must fall within reasonable safety standards. If staff do not approve of the level of risk in your project, you will be politely asked to think of something different. Diving or snorkeling are not permitted.

THE WRITE UP

Present your research as a scientific paper, formatted for the *Journal of Ecology*. This is an independent write up – the group work ends at the end of data collection. You are responsible for your own data analyses, graph preparation and writing.

Your paper should not exceed 2500 words in length (including in-text citations but not the reference list), plus a 350-word abstract (that is, a **total of 2850 words, plus references**). Follow the *Journal of Ecology* author guidelines as if you were going to submit the paper as a research article. You will find these at: https://besjournals.onlinelibrary.wiley.com/hub/journal/13652745/author-guidelines , and we have put a copy up in Moodle. Include a **word count**, or we will assume that your essay is too long. Please **double-space** your assignment, and use a **12-point font** with reasonable margins. You will need to upload a copy of your code and your raw data.

Citing relevant literature

You need to read and cite *at least* 10 (preferably more) different scientific papers on your topic. Make sure that your sources are from peer-reviewed scientific journals, or scientific books. The best place to find these papers is ISI Web of Science – and the library runs excellent workshops (online) to help you learn how to run proper literature searches. References to websites such as Wikipedia are unacceptable in a scientific paper. Format the references in the J Ecology format, as per the instructions to authors.

ASSESSMENT CRITERIA

Innovative idea and sound experimental design/data collection (15 Marks)

- Contributed to development of idea and experimental design (in the labs and in the field).
- Worked hard and did your best to gather good-quality data.
- Worked well as part of a team.

Excellent presentation of data (20 Marks)

- Appropriate choice of graph styles and statistics. Tables/appendices used appropriately, or not at all.
- Figures nicely presented (no excel or R default graphs!) with appropriate labels, legends, units etc.
- Results section written appropriately.

Appropriate interpretation of results (15 marks)

- Uses the results (including the statistics) to draw valid, interesting and reasonable conclusions from the data.
- Does not make conclusions beyond the scope of the data.
- *If* there were major problems with the data collection, explains how these could be avoided next time.

Synthesises ideas/information from a wide range of sources, and shows evidence of critical thought (30 marks)

- Shows evidence of independent, critical scientific thought. This can be done through original insights, your own novel ideas and clear arguments explaining your position on a topic.
- Cites (and shows evidence of having read and understood) at least 10 papers (preferably more), and shows how results fit with previous knowledge in the field, and synthesises information/ideas from different papers (ie, don't just tell us what a paper said – put the information together with what other authors have said and what you found, and show that you have thought about how the combined evidence supports/goes against a scientific idea or viewpoint).

Good scientific writing/presentation (20 marks)

- Good abstract (summarises the main ideas/conclusions of the paper, while making the reader want to know the full story, < 350>
- Logical structure, appropriate form for a paper in *J. Ecology*.
- Written in concise, grammatically correct sentences without spelling or punctuation mistakes, and with appropriate use of paragraphs.
- Written in an engaging style that holds the reader's interest.
- Statements backed up with appropriate references (in an appropriate form) throughout the text.
- Appropriate length (marks will be deducted for over-long assignments, or for failing to disclose the word count).
- Reference list presented in a style appropriate for *J. Ecology*.
- Provides code and raw data for analyses and figures.

Assessment Length

2850 words, plus references

Submission notes

The assignment is to be uploaded through Moodle, where it will go through Turnitin.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

End of session test

Assessment Overview

The end of session test will assess your understanding of the key ecological concepts and controversies explored in the course. The end of session test will be short answer questions and will be one hour in duration.

The test takes place in the last week of class and marks will be given to students within 1 week.

Course Learning Outcomes

- CLO1 : Assess and evaluate published scientific research and ecological theory.

Detailed Assessment Description

This test will contain eight six short answer (<= half a page) questions, of which you need to answer 6.

Questions will focus on some of the ideas that we focussed on in our discussions and arguments. Our hope is that students who have read the papers and engaged with the class all session will not find the test too difficult.

Example questions will be given in class.

The test will be done in person, and written by hand.

Assessment Length

This test will contain six short answer (less than half a page) questions.

Submission notes

The test is to be written by hand

Assignment submission Turnitin type

Not Applicable

Quizzes on readings

Assessment Overview

The weekly quizzes will assess your understanding of research topics explored in the weekly meetings. You will be expected to answer a short answer question on each of the posted readings.

Quizzes will be posted on moodle the week prior to the class. There are six quizzes during the term. Marks and feedback will be provided on moodle 1 week after each quiz

Course Learning Outcomes

- CLO1 : Assess and evaluate published scientific research and ecological theory.
- CLO2 : Identify and critique important research directions in plant ecology.

Detailed Assessment Description

Prior to the student-led discussion, the class is required to complete an assigned reading. Quizzes at the start of class measures understanding of this reading, and ensures that students are prepared to participate in the discussion.

Discussions of 14 controversial topics in plant ecology will take place throughout the course. We will have two discussions per week (~50 minutes each), separated by a 5-minute break.

We expect you to have read the allocated paper for each discussion before class (the one in bold font on the list of discussion topics, and available on Moodle). Doing these readings is essential to your ability to participate in a meaningful way in-class discussions, so we have small quizzes before each class to make sure everyone has done the readings, and to reinforce your understanding of the concepts presented in the papers.

Each quiz has one question per topic, and the questions are based on the papers you read for that discussion. They are short-answer questions (answers should be less than half a page). The quizzes will be written by hand at the start of each class (in person, bring paper and a pen). We will drop your lowest grade when we calculate the final grades, so if you miss one, or have a bad day, it will be ok.

The marks from your quizzes will make up 20% of your total grade for the course.

Assessment Length

Answers to be less than half a page (sometimes a sentence or a diagram will do) per question.

Submission notes

quizzes will be handwritten in person at the start of each discussion class.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

Grading Basis

Standard

Requirements to pass course

average 50% total.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Workshop	Wednesday: Introduction part 1 (how the course will run; review paper) Q1. Is the biotic interactions hypothesis a zombie idea? Friday: Introduction part 2 (research project) Q2. The evolution of plant strategies – was my ecology textbook wrong?
Week 2 : 3 June - 9 June	Workshop	Wednesday Q3. How severe are the impacts of introduced plant species? Q4. What makes communities susceptible to invasion? Friday Open lab
Week 3 : 10 June - 16 June	Workshop	Wednesday Experimental design and data analysis Friday Open lab
Week 4 : 17 June - 23 June	Workshop	Wednesday Q5. How is plant disease impacted by new stresses and changing climates? Q6. How will factors that limit species ranges impact the capacity to respond to climate change? Friday Open lab
Week 5 : 24 June - 30 June	Workshop	Wednesday Q7. How important is rapid evolution for plants? Q8. Are human activities reducing community biodiversity? Friday Open lab
Week 6 : 1 July - 7 July	Fieldwork	Field trip 1-4 July, at Glenrock Scout Camp
Week 7 : 8 July - 14 July	Workshop	Wednesday Q9. How does disturbance affect diversity? Q10. Do we spend too much time focussing on rare species? Friday Open lab
Week 8 : 15 July - 21 July	Workshop	Wednesday Q11. Is succession past its climax? Q12. The emergence of novel ecosystems Friday Open lab
Week 9 : 22 July - 28 July	Workshop	Wednesday Q13. Are specialists safer biocontrol agents than generalists? Q14. Plant interactions with pathogens and symbionts. Friday No class
Week 10 : 29 July - 4 August	Workshop	Wednesday Revision and summary Friday End of term test

Attendance Requirements

Please note that lecture recordings are not available for this course. Students are strongly encouraged to attend all classes and contact the Course Authority to make alternative arrangements for classes missed.

General Schedule Information

This course consists of 4 hours of class contact hours per week. You are expected to take an average of 5 additional hours of non-class contact hours per week to complete assessments,

prepare your review paper, carry out your research project, do the readings and prepare for the end of term test.

Course Resources

Prescribed Resources

Many resources to help you with this course, including resources for writing, data analysis and literature searching, are available on the Moodle page for this course.

Recommended Resources

There is no text book for this course. You will find all the resources you need on Moodle.

Additional Costs

The field trip will have a cost associated with it (e.g. to cover the cost of food - all meals are provided). The cost is finalised once we have final numbers, but should be in the range of ~$250 for the 4 days.

Course Evaluation and Development

We regularly assess this course, and have made substantial changes based on student feedback.

Changes in 2024 include a new field trip location (Smiths Lake was too cold, and too many people had been there repeatedly), a 10.30pm curfew on the field trip, clearer instructions on the review paper, dropping the last discussion class, and moving to the three day extension system.

We will ask you for feedback at the end of the course this year so we know what to change for next year.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Angela Moles		D26, 401e	+61 2 9065 1193	by appointment	Yes	Yes
Lecturer	Stephen Bonser		D26 401a	+61 2 9065 9626	by appointment	No	No
Lab staff	Guy Taseski			+61 2 9385 2817	by email	No	No

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the UNSW Student Code of Conduct Website.

Academic Honesty and Plagarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.
Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.
Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The Current Students site,
- The ELISE training site, and
- The Use of AI for assessments site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: https://student.unsw.edu.au/special-consideration

Important note: UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- The Current Students Gateway
- Student Support
- Academic Skills and Support
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- UNSW IT Service Centre
- Science EDI Student Initiatives, Offerings and Guidelines