BIOL3410

Plant Biology

Session 2, Special circumstances, North Ryde 2021

Archive (Pre-2022) - Department of Biological Sciences

Contents

Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

Unit convenor and teaching staff
Convenor
Andrea Westerband
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Ian Wright
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Credit points
10

Prerequisites
130cp at 1000 level or above including ((BIOL2410 or BIOL227) or BIOL210 or (BIOL2310 or BIOL228) or (BIOL2210 or BIOL229) or (ENVS266 or ENVS2266))

Corequisites

Co-badged status

Unit description
This unit draws together elements of plant ecology, evolution and ecophysiology, and will be useful for students with interests at many scales, including plant conservation, ecology, and environmental science. Topics will include: An overview of Australian and global plant communities; Basics of plant identification; Plant evolution; Basic physiology of photosynthesis, respiration, nutrient uptake and plant water use; Plant functional traits and ecological strategies; Plant functions and fluxes at ecosystem-scale; Impact of climate change on plants and communities; Future directions in plant functional ecology.

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: Explain the factors underpinning major patterns of plant distribution globally and within Australia

ULO2: Recall key features of major Australian plant families

ULO3: Summarise major features of photosynthesis, respiration, plant water use and nutrient use, both at physiological and ecosystem scales

ULO4: Demonstrate in-depth understanding of plant morphological and physiological adaptations to major environmental factors

ULO5: Describe the role of plant functional traits in plant ecological strategies

ULO6: Collect, analyse, present and interpret ecophysiological data

General Assessment Information

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

- Students are expected to regularly attend/participate in the twice-weekly online lectures/ discussions, and are expected to attend the weekly prac/tutorial classes, some of which will be on-campus.
- All students must also attend both days of the on-campus session on September 4 and 5, a Saturday and Sunday.

Assessment for this unit consists of a mixture of quizzes, short prac/tutorial reports, a major written report, and a final exam. Submission of all assessments and completion of all exams is essential for adequate progress, since all assessment tasks are required to master the content of this unit. It will be essential to keep up with the lectures and associated quizzes, and the pracs/ tutorials and their associated short reports, as marks accrue throughout the semester.

All assessments will be graded and we will make marks available within three weeks of the assessment due date (but sooner, generally). Marks will be available on Gradebook in iLearn. Feedback on the written assignment will be provided through Turnitin when the marks are released.

Quizzes on lecture and prac material (10%)

There will be five multiple choice quizzes through the semester, each worth 2%. The quizzes are designed to incentivise staying up to date with lecture material and with prac reports. **Quizzes will be held in weeks 2, 4, 7, 10, 13, *although this is subject to change*.** Each quiz will open on iLearn on the Wednesday (after the lecture) and close on the Sunday of that week, at midnight. Once you start the quiz you will have 60 minutes to complete it and you are allowed two attempts. The quizzes will be automatically marked, and the marks and correct answers will be released once submissions have been completed.

The questions are designed to ensure that you have ***familiarity*** with the lecture material and with key concepts from the prac classes. They do not require a deep understanding of the lecture material (deeper understanding will be assessed in the exams, and in the major written report).

Short reports on practical classes and tutorials (25%)

We will run weekly pracs/tutorials throughout the semester. In-person attendance for a portion of these classes is expected, unless the University shifts back to entirely remote-learning mode. A short report from four of the classes will require submission through iLearn, generally (but not

always) one week after the class (**in weeks 4, 5, 7, 11**). Each short report will be **worth 4% of your grade**. These reports are designed to test your knowledge of topics covered in these classes, which will generally coincide with topics covered in lectures. More information on these assessments will be provided as the semester progresses.

This year we will also replace one of the short reports with a ***Mid-semester Exam***, which will be held during the prac/tute slots in **week 9.** This exam will be **worth 9% of your grade**, and will test students on key concepts from the course, providing students with a clear understanding of what to expect on the exam with regards to content and difficulty. Similar to the final exam, the mid-semester exam will focus on material from the lectures, but may also include some material from the pracs/tutes.

Plant Function Report (25%)

Students will submit (through Turnitin) a substantial written report related to field/lab work carried out during the on-campus session. The report will be due in **Week 8**, and must be written in the style of a scientific journal article and will require that students conduct a small literature review, analyze data collected during the on-campus session, and use this information to test hypotheses regarding plant form and function. Please use the following list to check your assignment before electronic submission:

- Text is the required length
- Text has been proof-read and spell-checked
- References are reputable sources, and are cited at appropriate points within the text
- Formatting of references in the text and in the reference list follows the style of *Austral Ecology* journal.
- Assignment is your own work - not copied verbatim from reference sources or other students. (see note on plagiarism, below, and the relevant University Policy)

More information on this assessment will be provided as the semester progresses.

Final examination (40%)

The final exam will be three hours duration and held in the official university examination period at the end of the session. The exam will consist of short- , medium- and extended-answer questions.

Checklist for written assessments

For all written assessments: please use the following list to check your assignments before electronic submission.

- Text is the required length
- Text has been proof-read and spell-checked
- References are reputable sources (not Wikipedia!), and are cited at appropriate points within the text
- Formatting of references follows the style of a standard ecological journal, e.g. *Austral*

Ecology or *Functional Ecology*.

- Assignment is your own work – no passages have been copied verbatim from reference sources or from other students. (see note on plagiarism, below, and the relevant University Policy)

Penalties

5% of the marks for the written assignments will be deducted for each day they are late, and assignments will not be accepted for marking if more than 10 days overdue. Exceptions can be granted by the unit Convenors if there are sufficiently serious medical or other extenuating circumstances (**appropriate supporting documentation should be provided, through the University's online system).** For example, if the initial score for an assessment is 67% but it has been submitted one day late, the final score will be 62% (or 57% if two days late, etc).

As outlined in assessment rubrics, penalties will be applied for reports being noticeably over the word limit, and increasingly so the more over the limit they are.

Plagiarism

Students are required to written reports via the plagiarism detection software Turnitin. This can be accessed on the unit's iLearn website. Your assessment task will be automatically compared to work of your classmates, previous students from Macquarie and other universities, and with material available on the Internet. The results of the analysis will be sent to the unit Convenor. Any evidence of plagiarism will be dealt with following University policy. The penalties imposed by the University for plagiarism are serious and may include loss of marks, referral to a Faculty Disciplinary Committee, or even expulsion from the University.

Moderation of assessments

This unit and its assessments are moderated according to departmental and university requirements. For example, where assessments are marked by multiple people, all agree on the marking process and marks are compared to ensure consistency.

Assessment Tasks

Name	Weighting	Hurdle	Due
Short reports on pracs/tutes	25%	No	Weeks 4, 5, 7, 11
Quizzes on lecture & prac material	10%	No	Weeks 2, 4, 7, 10, 13
Final exam	40%	No	TBD
Plant function report	25%	No	Week 8

Short reports on pracs/tutes

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **Weeks 4, 5, 7, 11**
Weighting: **25%**

Reports from selected pracs and tutorials

On successful completion you will be able to:

- Summarise major features of photosynthesis, respiration, plant water use and nutrient use, both at physiological and ecosystem scales
- Demonstrate in-depth understanding of plant morphological and physiological adaptations to major environmental factors
- Describe the role of plant functional traits in plant ecological strategies
- Collect, analyse, present and interpret ecophysiological data

Quizzes on lecture & prac material

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 24 hours
Due: **Weeks 2, 4, 7, 10, 13**
Weighting: **10%**

Online quizzes

On successful completion you will be able to:

- Explain the factors underpinning major patterns of plant distribution globally and within Australia
- Recall key features of major Australian plant families
- Summarise major features of photosynthesis, respiration, plant water use and nutrient use, both at physiological and ecosystem scales
- Demonstrate in-depth understanding of plant morphological and physiological adaptations to major environmental factors

Final exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 26 hours
Due: **TBD**
Weighting: **40%**

Final invigilated exam will be held during the formal examination period

On successful completion you will be able to:

- Explain the factors underpinning major patterns of plant distribution globally and within Australia
- Recall key features of major Australian plant families
- Summarise major features of photosynthesis, respiration, plant water use and nutrient use, both at physiological and ecosystem scales
- Demonstrate in-depth understanding of plant morphological and physiological adaptations to major environmental factors

Plant function report

Assessment Type [1]: Report
Indicative Time on Task [2]: 30 hours
Due: **Week 8**
Weighting: **25%**

Major written report for the unit

On successful completion you will be able to:

- Explain the factors underpinning major patterns of plant distribution globally and within Australia
- Summarise major features of photosynthesis, respiration, plant water use and nutrient use, both at physiological and ecosystem scales
- Demonstrate in-depth understanding of plant morphological and physiological adaptations to major environmental factors
- Describe the role of plant functional traits in plant ecological strategies
- Collect, analyse, present and interpret ecophysiological data

[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

On-campus attendance is required for all offerings of this course.

Requirements for Practical classes

The work carried out during practical classes is an important and integral part of the course. You must read, download and either print the prac notes to bring to each class, or bring them on a laptop or tablet. Laptops are also available for short-term use during the practical class.

Laboratory requirements

- Notebook and pencils/pens for notes & diagrams
- Laptop, if you have one, with Excel and Word (or open source equivalents)
- USB data stick to transfer data (recently checked with anti-virus software)
- **Enclosed shoes** (**you cannot be present in the lab or field without these**)
- No food or drink in University laboratories
- Please switch mobile phones off

Field requirements

- Pencils/pens for notes
- Appropriate clothing (walking shoes or boots, rain jacket, sun protection, trousers and long sleeved shirt)
- Water bottle and lunch/snacks
- Small back pack to carry your equipment
- First aid kits will be supplied

NOTE 1: During the on-campus session, there will be a 15 minute walk into the Macquarie (MQ) Ecology Reserve and working in uneven terrain. Any students with medical issues or requiring assistance should indicate this on their fieldwork participation form. **All students must submit this form otherwise they cannot participate in the fieldwork. Please submit this form, via iLearn, by the due date advertised closer to the time.**

NOTE 2: Occasionally there can be ticks and leeches present at the MQ Ecology Reserve, especially down near the creek. Neither insect carries disease but they are certainly a nuisance.

To minimize chances of problems you need to wear suitable clothing (as described above). We suggest tucking your pants into your socks, shirts into pants, etc, and liberally applying insect repellent to your shoes, clothes and exposed skin.

Recommended Reading

There is no set textbook for this subject. Recommended books (all available from the library as eBooks or hardcopies) that, between them, cover many of the topics dealt with in lectures include:

- Attiwill PM & Wilson B (Eds) (2006). *Ecology : An Australian Perspective.* Oxford University Press, South Melbourne, Vic.
- Atwell BJ, Kriedemann PE & Turnbull CGN (1999). *Plants In Action: Adaptation In Nature, Performance In Cultivation*. MacMillan Education Australia, Melbourne.
- Chapin FSI, Matson PA & Mooney HA (2002). *Principles of Terrestrial Ecosystem Ecology.* Springer, New York.
- Garnier E, Navas M-L, Grigulis K (2016) Plant Functional Diversity: Organism traits, community structure, and ecosystem properties. Oxford University Press, Oxford
- Gurevitch J, Scheiner SM & Fox GA (2006). *The Ecology of Plants.* Sinauer Associates, Inc. Publishers, Sunderland, MA. 2nd Edition.
- Lambers H, Chapin FS & Pons TL (1998). *Plant Physiological Ecology.* Springer-Verlag, New York.
- Pugnaire FI & Valladares F (Eds) (2007). *Functional plant ecology*. CRC Press, Boca Raton. 2nd Edition.
- Raven PH, Evert RF, Eichhorn SE (2013). *Biology of plants*. WH Freeman, New York. 8th Edition. (or 7th edition – published 2005).
- Willis KJ & McElwain JC (2014). *The Evolution of Plants.* Oxford University Press, Oxford. 2nd Edition.

Most or all lectures will include a list of key readings (journal articles, book chapters etc). Where possible we will make these available, whether through the Library Reserve or through the unit iLearn page. Please note that many of these readings are available online as eBooks.

Technology Used and required

All course content will be made available via the iLearn unit webpage (URL for iLearn is: http://ilearn.mq.edu.au/). You are expected to use iLearn for:

- Regularly checking subject announcements;
- Downloading lecture and reference materials;

- Submitting assignments;
- Checking your grades.

Students will be required to use appropriate software, particularly Excel and Minitab (or *R*, if you like), for data analysis and graphing. Minitab is available to download and install on your laptop via http://web.science.mq.edu.au/it/software/. Alternatively, you may choose to run Minitab via iLab (see https://wiki.mq.edu.au/display/iLab/About). R can be downloaded online for free from http://www.r-project.org.

Unit Schedule

Lectures will be held online, on Mondays from 1-2 pm, and on Wednesdays from 2-3 pm. A full lecture schedule will be provided at the beginning of semester.

Practical/Tutorial classes will be held weekly in the Glasshouse Labs either online or in 5WW-428, also known as F5A-428 -- at the top of the F5A car park. Students will enrol in one of two tute classes, either Wednesdays from 11:00 am -1:00 pm, or Wednesdays from 3-5pm. Further details of prac/tutorial topics will be given at the start of semester.

A compulsory On-Campus Session is scheduled for **Saturday-Sunday September 4-5.** This block practical is **compulsory for all students.** You are required to arrive at 8.30 am on the first day and 9.00 am on the second. Expect to finish around 5.00 pm on both days. Unless otherwise specified we will meet at the beginning of each day at the **Glasshouse labs.**

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
- Grade Appeal Policy
- Complaint Management 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 ask.mq.edu.au or if you are a Global MBA student contact 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) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- 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

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

If you are a Global MBA student contact globalmba.support@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/.

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

- For 2021, we are once-again running a mandatory On-Campus Session on **Saturday and Sunday,** September 4 and 5. We are also returning to a major written report in the style of a scientific journal article, rather than the project proposal. This report will require that students analyze data collected during the on-campus session and discuss their findings in the context of key concepts presented throughout the course.
- Lectures will be online again this year but is subject to change. The core lecture material will be essentially the same as in 2020, and we will have a set of guest lectures given by outstanding researchers working in the Sydney region in the second half of the course.
- Only some of the prac/tute classes will take place on campus. This year there will **only be four short reports (each worth 4% of the grade)** from these practical classes. One of the tutorials has been replaced with a **Mid-Semester Exam worth 9% of the grade**, which will take place online during the tutorial session in week 9.
- Similar to 2020, this year the final exam will have a stronger emphasis on extended answer questions than in previous years. This is designed to test student understanding of core concepts, and to synthesise ideas across different parts of the course. The Mid-Semester Exam will provide students with a clearer understanding of what to expect on the final exam, in terms of content and difficulty.

Changes since First Published

Date	Description
13/08/2021	Added BIOL3410@mq.edu.au mailbox as contact, as directed by Sharyon O'Donnell.