



BIOL3410

Plant Biology

Session 2, In person-scheduled-weekday, North Ryde 2024

School of Natural Sciences

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General Information

Unit convenor and teaching staff

Lecturer

Martyna Kotowska

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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

Requirements to pass the unit

This unit cannot be completed online. Assessment for this unit consists of a mixture of quizzes, short practical reports, a major written report, and a final exam based on material covered in the lectures, practical and fieldwork sessions. 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, as well as the practicals 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. Marks will be available on Gradebook in iLearn. Feedback on the written assignment will be provided through Turnitin when the marks are released.

To pass this unit you should **attempt all assessments** and must achieve a total aggregate mark **equal to or greater than 50%**.

Students are further expected to regularly participate in the twice-weekly lectures/discussions, the weekly practical classes which will be on-campus, and in both days of the on-campus session: either on August 31 + September 1, or September 7+8 (please note these sessions will be held on the weekend).

Quizzes on lecture material (10%)

There will be five multiple-choice quizzes throughout the semester, each worth 2%. The quizzes are designed to incentivise staying up to date with lecture material. **Quizzes will be held in Weeks 2, 4, 7, 10, 12.** Each quiz will open on iLearn on the Wednesday (after the lecture) and close on the Sunday of that week, at midnight. You are allowed two attempts per quiz. Once you start the quiz, you will have 60 minutes per attempt to complete it. 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. 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 (25%)

We will run weekly practicals throughout the semester. In-person participation for these classes is expected. A short report from five of the classes will require submission through iLearn, either one week after the class (**in Weeks 3, 7, 11 and the reports will be due in Weeks 4, 8, 12, respectively**) or on the day of the class (**in Weeks 6, 11**). Each short report will be **worth 5% 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 unit does not have a Mid-semester Exam.

Plant function report (25%)

Students will submit (through Turnitin) a substantial written report related to field/lab work carried out during the on-campus sessions. The report will be due in **Week 10**, and must be written in the style of a scientific journal article and will require that students conduct a small literature review, analyse data collected during the on-campus sessions, and use this information to test hypotheses regarding plant form and function. Please use the **Checklist for written assessments** to check your assignment before electronic submission.

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

Final examination (40%)

The final exam will be 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, and are cited at appropriate points within the text
- Formatting of references follows the style of the *Austral Ecology* journal
- Assignment is your own work – no passages have been copied verbatim from reference sources or from other students. (See note on plagiarism and use of GenAI below and the relevant University Policy)

Plagiarism Students are required to write 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. Please also

check the Macquarie advice on using [generative AI](#). 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.

Late assessment submission penalty

Students enrolled in Session-based units with written assessments will have the following university standard late penalty applied. Please see <https://students.mq.edu.au/study/assessments-exams/assessments> for more information.

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11:55 pm. A 1-hour grace period is provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for [Special Consideration](#).

In this unit, late submissions will be accepted as follows:

- Assessment Quizzes – YES, Standard Late Penalty applies
- Assessment Short Reports – YES, Standard Late Penalty applies
- Assessment Plant Function Report – YES, Standard Late Penalty applies
- Assessment Final Exam – NO, unless Special Consideration is Granted

Special considerations The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment.

Assessment Tasks

Name	Weighting	Hurdle	Due
Quizzes on lecture & prac material	10%	No	Weeks 2, 4, 7, 10, 12
Final exam	40%	No	TBD
Plant function report	25%	No	Week 10
Short reports on practicals	25%	No	Weeks 4, 6, 8, 11, 12

Quizzes on lecture & prac material

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 24 hours

Due: **Weeks 2, 4, 7, 10, 12**

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 10**

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

Short reports on practicals

Assessment Type ¹: Report

Indicative Time on Task ²: 15 hours

Due: **Weeks 4, 6, 8, 11, 12**

Weighting: **25%**

Reports from selected practicals

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

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 expected for all offerings of this course.

Week 1 classes

Lectures will be delivered from Week 1. The first lecture will be delivered on 22 July 2024, and the first practical session will be held on 29 July 2024.

Methods of communications

We will communicate with you via your university email and through announcements on iLearn. Queries to convenors can be sent to the unit convenor via the contact email on iLearn. General queries can be placed on the iLearn discussion board, which will be monitored by the unit convenor.

Requirements for practical classes

The work carried out during practical classes is an important and integral part of the course. You must read and either download the practical notes on a laptop or tablet or print them to bring to each class. 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 backpack to carry your equipment
- First aid kits will be supplied

NOTE 1: During the on-campus sessions, 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: Ticks and leeches can occasionally be present at the MQ Ecology Reserve, especially 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. Second Edition.
- 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 (2011). *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 (2021). *The Ecology of Plants*. Sinauer Associates, Inc. Publishers, Sunderland, MA. Third Edition.
- Lambers H, Chapin FS & Pons TL (2019). *Plant Physiological Ecology*. Springer-Verlag New York. Third Edition (or Second Edition – published 2008).
- Pugnaire FI & Valladares F (Eds) (2007). *Functional plant ecology*. CRC Press, Boca Raton. Second Edition.
- Raven PH, Evert RF, Eichhorn SE (2013). *Biology of plants*. WH Freeman, New York. Eighth Edition (or Seventh Edition – published 2005).
- Willis KJ & McElwain JC (2014). *The Evolution of Plants*. Oxford University Press, Oxford. Second Edition.

Most 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 (the 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, 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>.

Policies and Procedures

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

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](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 \(https://policies.mq.edu.au\)](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

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and

processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

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

- Lectures will be delivered in person this year. The core lecture material will be essentially the same as in 2023, and we will have a set of guest lectures given by renowned researchers in the field in the second half of the course.
- Some lectures will be pre-recorded and available online. We will have a Q&A/discussion session with the corresponding week's lecture material during the weekly lecture hour. These sessions will be on campus and will not be recorded. During this session, we will discuss key concepts and questions that will likely be included in the final exam. Students are highly encouraged to attend the sessions.

Unit information based on version 2024.04 of the [Handbook](#)