# BIOL3410

## Plant Biology

Session 2, In person-scheduled-weekday, North Ryde 2022

*School of Natural Sciences*

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# General Information

Unit convenor and teaching staff
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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.**

- Students are expected to regularly attend/participate in the weekly online QnA discussions, and are expected to attend the weekly prac/tutorial classes, all of which will be on-campus.
- All students must also attend both days of the on-campus session on September 3 and 4, 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 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. **Quizzes will be held in weeks 2, 4, 7, 10, 13.** 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 and tutorials (25%)

We will run weekly pracs/tutorials throughout the semester. In-person attendance for these classes is expected, unless the University shifts back to remote-learning mode. A short report

from five of the classes will require submission through iLearn, either one week after the class (**in weeks 4, 5, 10 and the reports will be due in weeks 5, 6, 11, respecitively**) or on the day of the class (**in weeks 7, 9**). 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 year we will 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 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)

Late Assessment Submission Penalty

From 1 July 2022, 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/assessment-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.

Assessments where Late Submissions will be accepted

In this unit, late submissions will 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

**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 |
|---|---|---|---|
| Quizzes on lecture & prac material | 10% | No | Weeks 2, 4, 7, 10, 13 |
| Short reports on pracs/tutes | 25% | No | Weeks 5, 6, 7, 9, 11 |
| Plant function report | 25% | No | 02/10/22 |
| Final exam | 40% | No | TBD |

## 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

## Short reports on pracs/tutes

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **Weeks 5, 6, 7, 9, 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

## Plant function report

Assessment Type [1]: Report
Indicative Time on Task [2]: 30 hours
Due: **02/10/22**
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

## 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

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[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/tutorial 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 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.

# 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
- 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). 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

# 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 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

- For 2022, we are once-again running a mandatory On-Campus Session on **Saturday and Sunday,** September 3 and 4. The associated major written 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 pre-recorded and available online this year. The core lecture material will be essentially the same as in 2021, 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. During the scheduled lecture hour every week, we will have a Q&A/discussion session with the lecturer(s) about the corresponding week's lecture material. These sessions will be on campus and will ot be recorded. During this session, we will discuss some important concepts and questions which are highly likely to be included in the final exam. So, students are highly encouraged to attend the sessions. This will also give them the opportunity to interact with world leaders and experts in various research areas of plant ecology.
- All of the practical/tutorial classes will take place on campus. This year there will **five short reports (each worth 5% of the grade)** from these practical classes. The **Mid-Semester Exam has been cancelled this year**.
- This year the final exam will have a mix of short answer and extended answer questions. The exam is designed to test student understanding of core concepts, and to synthesise ideas across different parts of the course.