

Term 2, 2021

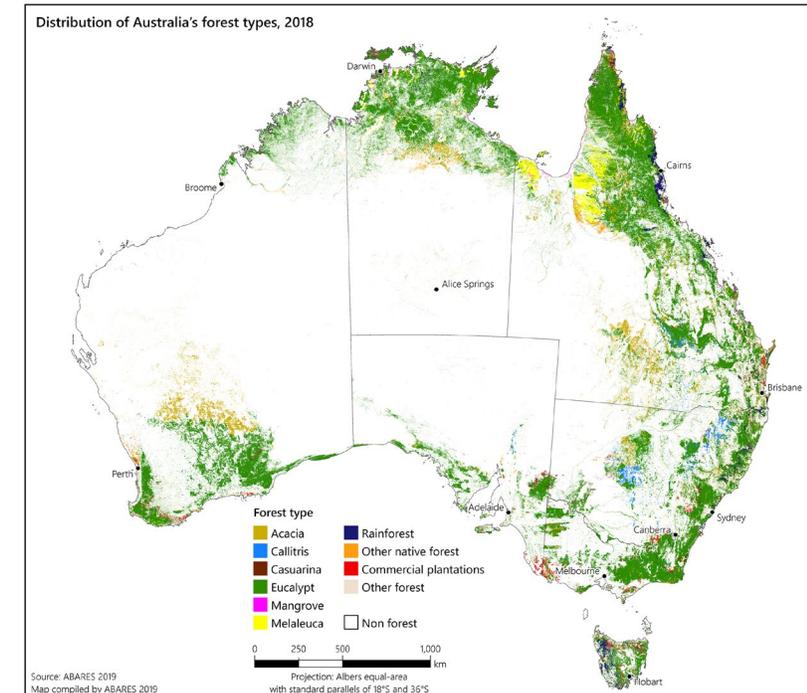
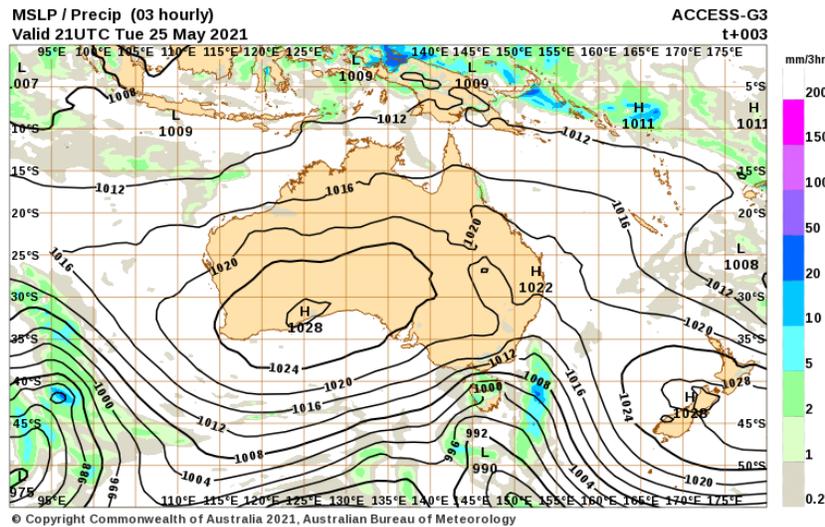
GEOS2711  
AUSTRALIAN CLIMATE  
AND VEGETATION

School of Biological, Earth and  
Environmental Sciences,  
Faculty of Science



UNSW  
SYDNEY

Australia's  
Global  
University



top: image from <http://www.bom.gov.au/australia/charts/viewer/index.shtml> accessed 26 May 2020.

bottom: image from <https://www.agriculture.gov.au/abares/forestsaustralia/profiles/australias-forests-2019> accessed 26 May 2020.

# GEOS2711 in a new 'COVID19-normal' environment

First and foremost, thanks for choosing GEOS2711 this term.

As noted in my first email to all enrolled students, teaching in GEOS2711 in T2 2021 will be hybrid with all lectures recorded and available on Moodle and a weekly face-to-face class. We are also re-introducing field work into GEOS2711 this year. In the School of BEES field work is an integral part of much of our research, and how we teach, and how you learn.

The 2020 online delivery involved significant changes to how the course was run and now in 2021 with a hybrid model it is changing again. I would emphasize that all of us involved in teaching GEOS2711 are committed to providing you with a high-quality course and learning environment, and to address all of the course learning outcomes. If you have issues with how the course is going, or your individual circumstances please discuss them as soon as they arise.

COVID19 certainly presents some challenges. If things change drastically, I will email you directly, but many announcements will primarily be via Moodle. Please note that participation in the face-to-face classes is necessary for the successful completion of many of the assessment tasks (and hence the course). Please note that you must complete the COVID Lab Safety Module on Moodle before your first face-to-face class.

Thanks again for enrolling in GEOS2711. I can always be contacted via email ([s.mooney@unsw.edu.au](mailto:s.mooney@unsw.edu.au)) or via Moodle if you would like to raise issues with me.

Best wishes

*Scott*

GEOS2711 Course Convener

## Information about GEOS2711

**A/Prof Scott Mooney** is the Course Convener in GEOS2711 and should be the first point of contact for any problems. You can check out what A/Prof Mooney does at <http://www.bees.unsw.edu.au/scott-mooney>: in GEOS2711 he will convene the course, present lectures and oversee the face-to-face classes. Please use email [s.mooney@unsw.edu.au](mailto:s.mooney@unsw.edu.au) (or Moodle) to raise issues.

**Professor Lisa Alexander** belongs to the UNSW Climate Change Research Centre <http://www.crcr.unsw.edu.au>. You can check out what she does at <https://research.unsw.edu.au/people/professor-lisa-alexander>. Professor Alexander will present the climate lectures in GEOS2711 and run a couple of the face-to-face classes, focusing on climate variability and climate extremes.

**Professor David Keith** works on vegetation dynamics, fire and population and ecosystem modeling. You can check out what Professor Keith works on here: <http://www.ecosystem.unsw.edu.au/people/david-keith>. In GEOS2711 he will present lectures, run a couple of face-to-face classes, focusing on areas within his broad expertise and lead the field work.

# Course Components

## Lectures

Lectures are pre-recorded and available on Moodle. There are 24 lectures in total: in most weeks there are three, but there are none in week 6 (the UNSW Study Break). Our plan is to have the lectures available and online before Monday at 11 am each week. In some cases lectures will be in shorter blocks, based on research, student feedback and our experience which suggests listening to small segments is more effective than one continuous long recording.

## Face-to-Face classes

There is a workshop every week (except for the UNSW Study Break in week 6). Workshops (called ‘tutorial-laboratories’ on the UNSW timetable) run Thursday 9:00 am to 1:00 pm in Lab 6 (Ground floor BioScience Building). Attendance/participation in the face-to-face classes is required to complete many of the exercises in the GEOS2711 Assessment Tasks. If you miss classes due to misadventure or illness, please discuss this with the Course Convener asap.

## Field work

There are two field classes planned in 2021. These are currently scheduled for the morning of Saturday 19<sup>th</sup> June (Artarmon) and Saturday 26<sup>th</sup> of June (Loftus). You must attend at least one of these field classes to complete the major assignment but please try to attend both.

# Course Description

<b>Course Description</b>	GEOS2711 Australian Climate and Vegetation is a 6 unit of credit course.  <i>Contemporary climatic patterns and controls in Australia. Development of the Australian vegetation. Elements of the Australian vegetation and their distribution. Climate change with particular emphasis on the Quaternary. ENSO phenomena and climatic variability in Australia. Fire and vegetation interactions. The impact of European occupation in Australia.</i>
<b>Course Aims</b>	The objective of <i>Australian Climate and Vegetation</i> is for students to reach an understanding of the topics summarised in the UNSW Handbook description. The course will present material relevant to the Australian climatic environment and vegetation of the continent. It covers introductory material associated with the academic disciplines of climatology, botany, biogeography and some elements of ecology and environmental science.
<b>Student Learning Outcomes</b>	By the end of this course, you will have an appreciation of the controls that shape the Australian climatic environment. These generic controls are also applicable to other locations on the Earth. Information regarding the nature of the Australian vegetation will lead to an understanding of the factors associated with the distribution of various communities, with a special emphasis on the vegetation of the Sydney Basin. The laboratory program is designed to consolidate many of these skills. The workshops in GEOS2711 are problem- and discussion-based and will consider conceptually difficult issues or reinforce aspect of the course content.

## Relationship to Other Courses/Programs

Australian Climate and Vegetation is distinct from, but complementary to the Stage 2 course *Australian Surface Environments and Landforms* (GEOS2721). Together with GEOS2821 *Introduction to GIS and Remote Sensing*, these courses make up Stage 2 of Physical Geography at UNSW and provide the background for more advanced Physical Geography courses.

GEOS2711 is also a core course in the Ecology Major (in Life Science, Environmental Management, Science and Advanced Science). The course has synergies with other geoscience and environmental science courses at UNSW and thereby provides an important element of geo- and environmental science programs. The course also has synergies with the 2<sup>nd</sup> year Biology course BIOS2051 *Flowering Plants*, which introduces the discipline of botany at UNSW.

<b>Graduate Attributes Developed in this Course</b>		
<b>Science Graduate Attributes</b>	<i>0 = NO FOCUS 1 = MINIMAL 2 = MINOR 3 = MAJOR</i>	<b>Activities/Assessment</b>
1. <b>Research, inquiry and analytical thinking abilities</b>	<b>3</b>	Lectures Workshops Field Exercises final exam, assignments final exam, assignments field-based assignment
2. <b>Capability and motivation for intellectual development</b>	<b>2</b>	The lectures in this course are introductory thereby motivating students towards further enquiry. The course is designed to provide relevant knowledge for various environmental science disciplines.
3. <b>Ethical, social and professional understanding</b>	<b>2</b>	Professional understanding developed through all components of the course. No focus on ethical or social issues beyond those relating to human impacts, vegetation and climate.
4. <b>Communication</b>	<b>3</b>	Skills in scientific communication developed through written assignments and report.
5. <b>Teamwork, collaborative and management skills</b>	<b>2-3</b>	Teamwork and collaboration are emphasized in the workshop activities. The various assessment tasks provide time management skills.
6. <b>Information literacy</b>	<b>2</b>	The course is designed to provide skills in information retrieval, with an emphasis on scientific enquiry.

# Rationale and Strategies Underpinning the Course

The learning and teaching rationale underpinning the course draws on of the following concepts:

- Learning is best achieved where students undertake a variety of tasks (reading, writing, discussing) and particularly those that stimulate higher-order thinking such as analysis, synthesis and evaluation. This is achieved through lectures and interactive discussion classes and exercises (workshops), where questions and critical thinking are encouraged;
- The learning experience is also enhanced through the use of activities that are interesting and challenging. Students are more engaged in the learning process when the relevance of the material to professional, disciplinary and/or personal contexts is obvious. A variety of teaching methods and modes of instruction are employed in GEOS2711;
- In GEOS2711 dialogue is encouraged between the students and teachers and among students, through the use of the online learning space Moodle and via discussion. The course aims for an inclusive learning and teaching experience, creating a community of learners.

## Recommended Text and Reading

Students should note that this course covers a wide range of material: you will be expected to read key references for each topic and to read around some of the topics. Key references are provided at the end of each lecture/section and many are posted onto Moodle.

**As a guide, the UNSW Academic Board suggests that a normal workload for a 6 UOC course is 9.4 hours per week (including class contact hours, time spent on assessable tasks and preparation/reading).**

There is no compulsory text set for this course however it is highly recommended that students have access to a general text. Bridgman *et al.* (2008 *The Australian Physical Environment*, OUP) is extremely useful as an overview of climate and biogeography in Australia. In addition, some older texts are still relevant and cover the climate of Australia well (e.g. Sturman & Tapper 1996 *The Weather & Climate of Australia and New Zealand*, OUP). For vegetation it is hard to go past *Australian Vegetation* (2017 edited by David Keith, Cambridge University Press) or *Ocean Shores to Desert Dunes* (2004 also by David Keith).

## Other Resources and Support for Students

Students should note that dedicated pages for GEOS2711 exist on Moodle and all course hand-outs, lectures, labs and announcements will be managed using this resource. Additional electronic resources will also be provided via Moodle. This means that you should check these pages regularly.

## WHS in GEOS2711

There are relatively few WHS issues associated with this course. Nonetheless, students should be aware that the BEES WHS site (<http://www.bees.unsw.edu.au/health-and-safety>) contains important information relating to workplace safety. This information complements that which can be obtained from the UNSW Health & Safety website (<http://www.safety.unsw.edu.au>). Information regarding WHS for the Fieldwork will be discussed in the classes prior to the meetings and in the field.

# Lecture Outline

Week	Indicative lecture number	Lecture title	Lecturer
1	Introduction	Introduction to the course	A/Prof Scott Mooney (SM)
	1	General features of Australia	SM
	2, 3	Contemporary climatic patterns in Australia	Prof Lisa Alexander (LA)
2	4, 5	The Australian vegetation: continental patterns and controls	Prof David Keith (DK)
3	6	Field survey methods, classification and mapping for native vegetation	DK
	7	Geophysical Sydney	SM
	8	The vegetation of the Sydney Basin	DK
4	9, 10	Biogeography of Australian vegetation	DK
5	11, 12	Fire, pyrogeography and plant populations in Australia	DK
	13, 14	Synoptic processes and rainfall in Australia	LA
week 6 UNSW study week (no classes in GEOS2711)			
7	15, 16	Cenozoic climate change and vegetation in Australia	SM
	17, 18	Quaternary environmental and vegetation change in Australia	SM
8	19	Alpine ecology: climate and vegetation	DK
	20, 21	Twentieth Century climatic variability in Australia	LA
9	22, 23	Extreme climatic events in Australia	LA
10	24	Recent vegetation change in Australia	SM
	Revision	Summary and Review	SM

# Outline of Face-to-Face classes (Workshops and Field Exercises)

In the following Table the lecturer in charge of the class is indicated in brackets.

week	Workshop (Thursday 9 am – 1 pm) Lab 6 Ground Floor BioScience
1	Lab Induction, COVID19 control measures Assumed knowledge Aims and learning outcomes  <b>Discussion and Exercise:</b> The synoptic-scale controls on the Australian climate (with <i>Climate Dogs</i> ) (SM)
2	<b>Discussion and Exercise:</b> Controls on climate at different spatial scales: the Australian continent v regional Sydney (LA)
3	<b>Discussion:</b> About Sydney: Controls on the vegetation of the Sydney Basin (SM)  <b>Exercise:</b> Introduction to field methods: describing vegetation (DK)
Saturday	Field exercise 1: Artarmon
4	<b>Exercise:</b> Analysis of field data (DK)
Saturday	Field exercise 2: Loftus
5	<b>Discussion:</b> Online investigation of a field site (SM)  <b>Exercise:</b> Vegetation mapping (DK)
7	<b>Discussion and Exercise:</b> Long term climate change in Australia: drivers of long-term trends in vegetation (SM)
8	<b>Discussion:</b> Scenarios for predicting climate change (LA)  <b>Exercise:</b> The distribution of Australia's alpine flora under climate change scenarios (DK)
9	<b>Discussion and Exercise:</b> Analysing climate data: identifying variability and extremes (LA)
10	Revision (TBC: if demand)

## Course Assessment

	%	Due date
1. Short written assignment 1 (The controls on climate)	15	end of week 3 (Friday 18 <sup>th</sup> June)
2. Short written assignment 2 (The Australian vegetation)	15	end of week 6 (Friday 9 <sup>th</sup> July)
3. Major Field Report	20	end of week 8 (Friday 23 <sup>rd</sup> July)
4. Final Examination	50	exam period
Total:	100%	

## Important Notes about the Assessment in GEOS2711

- In this course all written assignments must be submitted electronically via Moodle. Instructions will be provided in the workshop classes.
- The assessment criteria for each of the assignments will be discussed in the workshops preceding that task. Each assignment will be assessed and returned within two weeks of submission with written feedback. Students should be aware that the amount of feedback is normally positively correlated with their own efforts!
- Assignments submitted after the due date will be penalised at the rate of 10% per day unless you have been granted Special Consideration (which usually requires a Medical Certificate). All outstanding assignments must be handed in by the end of Week 10. Work will only be accepted after this date if Special Consideration is granted.
- References in assessed material must use the 'in-text' or Harvard system (see <https://student.unsw.edu.au/referencing> for information).
- Academic misconduct will not be tolerated in any form in this course and particular attention is drawn to the information about plagiarism included over. Please carefully read the section on plagiarism in GEOS2711 and the separate document on Moodle which outlines penalties

## Course Evaluation and Development

Student feedback is gathered regularly in GEOS2711 by various means, including "Course and Teaching Evaluation and Improvement (CATEI)", MyExperience, through discussion on Moodle (previously WebCT, Blackboard) and in classes via occasional end of session surveys. Such feedback is carefully considered with a view to acting on it constructively wherever possible. This feedback has helped to shape and develop this course resulting in continuous modifications to the lecture, workshop/lab and field content. Considerable 'tweaking' of the assessment schedule has occurred to better reflect the time that students have devoted to various tasks. In past evaluation students were concerned about plant identification during the fieldwork: this has been addressed with a focus on vegetation structure and dominant species only in the field. Since 2015 we have significantly enhanced the climate section of the course, with the addition of a specialist climatologist. It should be emphasized that in previous surveys a very high proportion of students described the course as "challenging and interesting". If you have any constructive criticism with a view to making this an even better course, please contact the course convener.

## What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own. Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via <https://student.unsw.edu.au/plagiarism>.

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre at <https://student.unsw.edu.au/individual-consultations-academic-support>.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

\* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle

† Adapted with kind permission from the University of Melbourne.

## Equity and Diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener or with UNSW Disability Support Services <https://student.unsw.edu.au/disability>. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

## Grievance Policy

In all cases you should first try to resolve any issues with the course convener (SM). If this is unsatisfactory, you should contact the Director of Teaching in BEES (A/Prof Stephen Bonser [s.bonser@unsw.edu.au](mailto:s.bonser@unsw.edu.au)) or the Head of School, School of BEES (A/Prof Alistair Poore, [a.poore@unsw.edu.au](mailto:a.poore@unsw.edu.au)). UNSW has formal policies about the resolution of grievances that can be reviewed in MyUNSW A to Z Guide (see <https://student.unsw.edu.au/complaints>).