CLIM1001/GENS0401

INTRODUCTION TO CLIMATE CHANGE

BEES

FACULTY OF SCIENCE

T3, 2022

Course Outline

1. **Staff**

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenors	A/Prof Gabriel Abramowitz	gabriel@unsw.edu.au	By appointment, virtually (or in person should restrictions ease).	Room 467, CCRC, Level 4, Mathews Building (F23),
	Prof Katrin Meissner	k.meissner@unsw.edu.au	By appointment, virtually (or in person should restrictions ease).	CCRC, Level 4 Mathews Building (F23)
Lecturers	All material is delivered online via course Moodle site.			Use discussion boards on Moodle for all enquiries regarding lecture content.
Other support staff	BEES admin (for non-course specific issues)	beesinfo@unsw.edu.au	BSB Student office 5th Floor, Biological Sciences Building	9:00am- 4:30pm

2. Course information

Units of credit: 6UOC

Pre-requisite(s): None

Teaching times and locations: This is an online only course. The official timetable can be found at http://timetable.unsw.edu.au/2022/CLIM1001.html and http://timetable.unsw.edu.au/2022/GENS0401.html

2.1 Course summary

Why do people disagree so much about climate change? How can you tell fact from fiction in the debate? How do we know climate change is happening and what are the causes? Climate change is now an issue confronting many disciplines, from architecture, engineering and business through to environmental science, public health, law and economics. This online course will draw on a broad collection of UNSW experts to cover the basics of climate change science, as well as a selection of key related areas from psychology, law, politics, economics, energy supply, ethics and health. A range of perspectives on the nature of these challenges will be treated with a critical analysis approach, as well hands-on engagement with the peer review process, highlighting its role in the scientific process. This course is an online-only offering.

2.2 Course aims

This course aims to give students an understanding of the fundamentals of climate change science, an appreciation for the multi-disciplinary nature of the climate change problem, and the need for a critical analysis approach to problem solving in this area.

2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Outline the key drivers of the climate system, interactions between climate system components and the mechanisms involved in anthropogenic climate change.
2. Critically analyse relevant material from a range of scientific and public information sources.
3. Describe the scientific method, the peer review process and explain how these are embodied in Intergovernmental Panel on Climate Change best practices.
4. Evaluate examples of climate change adaptation and mitigation strategies and describe how these potentially affect future climate change impacts.
5. Work effectively as part of a problem-solving team in a digital environment.

2.4 Relationship between course learning outcomes and assessments

This is a first year climate science course and a general education course. As it is a general education course, it does not have prescribed Program Learning Outcomes (PLOs).

Course Learning Outcome (CLO)	**LO Statement**	**Program Learning Outcome (PLO)**	**Related Tasks & Assessment**
CLO 1	Outline the key drivers of the climate system, interactions between climate system components and the mechanisms involved in anthropogenic climate change.		Online quizzes Discussion forum
CLO 2	Critically analyse relevant material from a range of scientific and public information sources.		Group work assessments Discussion forum
CLO 3	Describe the scientific method, the peer review process and explain how these are embodied in Intergovernmental Panel on Climate Change best practices		Final individual assessment Discussion forum
CLO 4	Evaluate examples of climate change mitigation strategies and describe how these affect climate change impacts.		Online quizzes Discussion forum
CLO 5	Work effectively as part of a problem-solving team in a digital environment.		Group work assessments

3. Strategies and approaches to learning

3.1 Learning and teaching activities

This course strongly focuses on inquiry, critical analysis and communication based on substantiated, robust and expert information. The teaching strategies used to reflect this premise and develop associated graduate attributes are:

1. Content drawn from a large number of research-active experts in their field
2. Some assessments focused on undisputed information
3. Some assessments focused on contentious information
4. Some assessments focused on communication, group work and participation.

A multi-media approach to content delivery will cover a variety of climate related disciplines. Each course section will be guided by short video snippets from leading UNSW researchers active in the area. This will expose students to different research foci and priorities and underscore the necessity and effectiveness of multi-disciplinary problem solving. Online assessments are a mixture of peer assessment and challenging (but open-book) multiple choice. Peer assessment using thorough, guided, rubric-based marking will form the core of group-based assignments, with a strong focus on students understanding the nature of the peer review process in science. A final Individual assessment task allows students to draw on and reflect on the group work content and dynamics. Interactive discussions between students and course staff are aimed at personalising feedback in addition to peer assessment and feedback.

3.2 Expectations of students

This is an online only course and therefore there are no physical attendance requirements. However, the course requires regular and consistent online participation including online group work with other students. Students are expected to familiarise themselves with the course documentation and spend around 6 hours per week on the course. This includes going through lesson content, group work activities, participating in group and course discussion forums.

Students are expected to complete all relevant lessons in a timely manner and participate in online discussions through the course's Moodle website. Students are expected to participate in and submit all assessments except in the event of extenuating and unforeseen circumstances (see below).

Students are expected to conduct themselves in an ethical and professional manner at all times. Students can also expect this of all teaching and support staff and their peers. Students can expect their inquiries to staff to be answered in a timely fashion (1-2 business days). Students can also expect inclusion and equity measures to be applied where they can make a case for this through academic adjustments. Students can expect their personal details and circumstances to be kept in the strictest of confidence.

Academic misconduct will not be tolerated in any form in this course. Substantiated instances of cheating or plagiarism may result in a failure grade. Please go to https://www.student.unsw.edu.au/plagiarism to see what constitutes plagiarism.

4. Course schedule and structure

[This course consists of 0 hours of class contact hours. You are expected to take an additional 6 hours of non-class contact hours each week to complete online lessons, assessments, discussion boards and readings.]

Week	Topic [Module]	Activity [Learning opportunity]	Related CLO
Week 1	Climate change psychology	Online lessons Topic-specific moderated discussion board	CLO1 CLO2
Week 2	Scientific method, peer review and the IPCC	Online lessons Topic-specific moderated discussion board	CLO1 CLO3
Week 3	The Earth's energy budget and the greenhouse effect	Online lessons Topic-specific moderated discussion board **Group peer review assessment 1: Writing a critical summary (10%)**	CLO1 CLO2 CLO3 CLO4 CLO5
Week 4	Perturbations to the climate system	Online lessons Topic-specific moderated discussion board **Multiple choice quiz 1 (10%)** **Rate group members participation for group assessment 1 (weights your group mark to give your 10% grade)**	CLO1 CLO5
Week 5	Climate observations and extremes	Online lessons Topic-specific moderated discussion board	CLO1
Week 6	Global circulation and climate variability	Online lessons Topic-specific moderated discussion board **Group peer review assessment 2: Writing peer reviews (10%)**	CLO1 CLO2 CLO3 CLO4 CLO5
Week 7	Past climate variations	Online lessons Topic-specific moderated discussion board **Multiple choice quiz 2 (10%)** **Rate group members participation for group assessment 2 (weights your group mark to give your 10% grade)**	CLO1 CLO2 CLO3 CLO5
Week 8	Climate change law	Online lessons Topic specific moderated discussion board	CLO4
Week 9	Climate models and future projections; Impacts – sea level rise and ocean acidification	Online lessons Topic-specific moderated discussion board **Group peer review assessment 3: Addressing peer reviews (10%)**	CLO2 CLO3 CLO4 CLO5
Week 10	Energy Systems	Online lessons Topic-specific moderated discussion board **Multiple choice quiz 3 (10%)** **Rate group members participation for group assessment 3 (weights your group mark to give your 10% grade)**	CLO4 CLO5
Week 11 (Study period T3)		**Individual peer review reflection (25%)**	CLO2 CLO3 CLO4

5. Assessment

5.1 Assessment tasks

Assessment task	Length	Weight	Due date (midnight on due date)
Assessment 1: Three online multiple choice tests based on weekly online lessons.	40 questions each Unlimited time	30% (10% each)	Quiz 1: Sunday of Wk 4 (9 October) Quiz 2: Sunday of Wk 7 (30 October) Quiz 3: Sunday of Wk 10 (20 November)
Assessment 2: Weekly discussion board mark	Constructive, frequent, detailed and relevant discussion engagement.	15%	Staff will mark your contributions to the weekly discussion forums once the course has finished.
Assessment 3: Three phases of group peer review	1 to 1.5 pages depending on the phase + Short online group participation grading	30% (10% each) Staff marking weighted by group participation grade	Phase 1: Sunday of Week 3 (2 October) Phase 1 participation grade: Sunday of Week 4 (9 October) Phase 2: Sunday of Week 6 (23 October) Phase 2 participation grade: Sunday of Week 7 (30 October) Phase 3: Sunday of Week 9 (13 November) Phase 3 participation grade: Sunday of Week 10 (20 November)
Assessment 4: Individual peer review reflection	1000 words	25%	Draft to *UNSW Smarthinking* Wednesday Week 11 (23 November) Final submission Sunday of Week 11 (27 November)

Further information

UNSW grading system: https://student.unsw.edu.au/grades

UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2 Assessment criteria and standards

The **online multiple-choice tests** are aimed at reinforcing key ideas from lesson material. They are taken from each week's lesson material (not the additional material). There are three of them, each covering material from the preceding few weeks of lesson material. They may be taken as an open-book test - you can look at your notes if you wish, but note that rules regarding plagiarism are strictly enforced. They must be your answers. Marks will be awarded and available immediately after you attempt the test, and **you can attempt each question only once**.

The **discussion board participation** mark is based on your engagement in online discussions in Moodle. Marks are not awarded for knowing a lot about a topic nor are they lost for being wrong about anything. Students who constructively and critically engage in discussions throughout the course can expect to receive a full mark – see the rubric below to see how grading is performed. Staff will be monitoring discussion boards throughout the term, and give a grade to each student at the end of the term based on this rubric. We ideally expect to see weekly engagement in discussion boards.

	4 - Excellent	**3 - Good**	**2 - Fair**	**1 - Poor**	**0 - Did not attempt**
Frequency and responsiveness	Frequent engagement, conversational, always followed up on their posts	Reasonably frequent engagement, usually followed up on their posts	Engaged several times, usually didn't follow up	Only engaged a few times and almost never follow up on posts	Nothing was submitted
Helpfulness and constructiveness	Regularly helped others understand material, always respectful, polite, constructive	Several examples of helping others or expanding on detail for others benefit, respectful and polite	Some examples of helping others or clarification	Only posted their own ideas, and/or regularly combative or aggressive	Nothing was submitted
Relevance of topic / comments	Consistently focused on topics relevant to each week's material in the appropriate weekly discussion board	Mostly focused on areas pertinent to the week's material	Occasionally focused on topics relevant to the week's material	Posts were generally not relevant to key issues being discussed in the week's material	Nothing was submitted
Critical analysis	Clearly contextualised and questioned information sources and conclusions; presented caveats or areas of uncertainty	It made some effort to give context to findings or explain some areas of uncertainty	Didn't adequately question information sources, explain implications of findings, or discuss any uncertainty	Appeared to use a single information source and simply accepted its validity	Nothing was submitted
Depth of responses (NOT length of response)	Reliably added new perspectives or insight after further investigation, tied in with other aspects of the course, and referred to relevant external sources where used	Clear examples of new insight or further investigation, some tying in with other aspects of the course and referencing	Some attempts to give new information, link to other aspects of the course, or reference external material	Simply posted opinion without further external input	Nothing was submitted

Individual peer review reflection. After engaging in a peer review process in the group activities, you are asked to write a reflection piece on the peer review process and the nature of scientific consensus. A draft needs to be submitted to UNSW's writing help service *Smarthinking* no later than four days before the final deadline. The final version will be submitted via Turnitin.

Group peer review practice. The group-based peer review exercise is a role play assessment to familiarize you with the peer review process and to provide students with an opportunity to work in teams in a digital environment. Your role is that of a research team writing and reviewing other researcher's work for publication in a journal. The staff will play the role of the journal editors. **Groups will be formed and articles assigned by Week 2**. Each group will then produce a short article summary (around 1 page), peer review article summaries from other groups, and then amend their own article summary, addressing the peer reviews they receive. For each of these three phases, group members will rate each other's role in the group task and this will be used to weight the staff mark given to the group to produce a mark for each student. Detailed instructions are on the Moodle course page.

Group phase 1: Your Article Summary will be reviewed by other students and marked by staff. Reviews and grades will be given according to this rubric:

	4 - Excellent	**3 - Good**	**2 - Fair**	**1 - Poor**	**0 - Did not attempt**
Research Skills	Well researched Relevant material from many sources	Enough relevant material from a range of sources to explain the topic	Lacked relevant material or seemed to rely on only one or two sources	Poorly researched Clearly didn't cover enough material to understand the topic	Nothing was submitted
Presentation and clarity	It was very well organised and clear to read	It was quite easy to read and understand what had been written and the structure made some sense	Some sections were difficult to understand, the structure was not clear	It was almost impossible to understand what was being talked about	Nothing was submitted
Critical analysis	Clearly contextualised and questioned its information sources and conclusions; presented caveats or areas of uncertainty	It made some effort to give context to its findings or explain some areas of uncertainty	Didn't adequately question its information sources, explain implications of its findings, or discuss any uncertainty	Appeared to use a single information source and simply accepted its validity	Nothing was submitted

Group phase 2: This rubric will be used to decide on the quality of a peer review.

	4 - Excellent	**3 - Good**	**2 - Fair**	**1 - Poor**	**0 - Did not attempt**
Constructiveness, helpfulness and politeness	The review really helped understand what needed to be improved, AND was polite in doing this	The review generally offered some helpful suggestions	The review didn't help to improve the article much OR was aggressive / impolite	The review offered no pathway to improvement AND was aggressive / impolite	No review at all
Thoroughness and understanding	The review clearly understood the content and arguments made in the Article Summary, and addressed a wide range of aspects of the Article Summary in detail	The review generally seemed to understand the points made in the Article Summary and covered several important aspects of the Article Summary	The review seemed to understand only some of the points made in the Article Summary and didn't provide much detail	The review clearly did not understand the points made in the Article Summary and only addressed one or two points very briefly	No review at all
Clarity and presentation	The review was concise, articulate and very clear	The review was generally clear	I understood some of what they were getting at in their review	I struggled to understand what the reviewer was suggesting at all	No review at all

Rating your group members

At each stage of the Group Peer Review Practice, you'll rate the other members of your group based on their contribution to submitting each task, according to this rubric:

	4 - Excellent	3 - Good	2 - Fair	1 - Poor	0 - Did not attempt
Communication and responsiveness	Person was easy to get hold of, polite, responsive and eager to help	Person responded in a timely way and was reasonably responsive	Person was often hard to contact or slow to respond	Person made very little effort to communicate with other group members	No contact at all
Time and work contribution	Person devoted significant time and effort to ensuring the success of the task	Person mostly contributed their fair share of work	Person contributed, but not nearly as much as others	Person tried to or succeeded in doing almost nothing	No contact at all
Flexibility and effectiveness within the group	Person was always constructive, flexible in their role, willing to take responsibility and help others	Person was generally helpful and constructive	Person played their role, but usually needed directing or help from others	Person avoided responsibility and generally wasn't helpful	No contact at all

5.3 Submission of assessment tasks

All assessments in this online only course are to be submitted online via the course Moodle page. See the course Moodle page for instructions.

In the event of illness or misadventure please contact the course coordinator as soon as possible in the first instance. Special consideration information can be found at *https://student.unsw.edu.au/special-consideration*

The BEES administration staff can also provide valuable information and assistance (contact details provided earlier).

The course coordinator should be alerted to any academic adjustments as soon as the student has the formal letter from the university stating what the adjustments are. This is to ensure that the adjustments are set in place before assessments are due.

5.4. Feedback on assessment

Moodle quizzes: marks will be awarded and answers available immediately post attempt

G*roup activities:* groups will be given feedback via the peer review process from other teams, as well as by staff who will act as the journal editor.

Individual peer review reflection: marks and comments will be awarded within two weeks of submission with feedback on Turnitin.

6. Academic integrity, referencing and plagiarism

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.[1] 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 and **plagiarism** can be located at:

- The *Current Students* site https://student.unsw.edu.au/plagiarism**,** and
- The *ELISE* training site https://subjectguides.library.unsw.edu.au/elise

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

7. Readings and resources

Reading material will be prescribed for each week on Moodle, from online material. As students in this course are from a wide range of academic backgrounds, some students will require more background reading in particular areas than others. Each week's material has core lessons that utilise a glossary, and also has additional reading material for those that want more detail and those needing further explanation. Please check Moodle regularly as updates to additional content may be posted throughout the course. There is a list of useful general references below.

With these and all materials you read throughout this course, we strongly encourage you to critically analyse their content, purpose and motivations. If you're not sure what that means, please read the following brief explanations to get an idea:

https://www.student.unsw.edu.au/writing-critical-review

https://www.uow.edu.au/student/learning-co-op/assessments/critical-analysis/

https://www.deakin.edu.au/students/studying/study-support/academic-skills/reading-and-note-taking

https://students.unimelb.edu.au/academic-skills/explore-our-resources/reading-and-notetaking/critical-literacy

Useful books:

Global Climate Change: Turning Knowledge Into Action by David E Kitchen, Pearson

Global Warming: The Complete Briefing by John Houghton, 2004

(free download from library)

The Climate Crisis by David Archer and Stefan Rahmstorf, 2010, Cambridge University Press

8. Administrative matters

See staff information provided in 1. Staff.

9. Additional support for students

- The Current Students Gateway: https://student.unsw.edu.au/
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing
- Disability Support Services: https://student.unsw.edu.au/disability-services
- UNSW IT Service Centre: https://www.it.unsw.edu.au/students/index.html

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.