625-335 Global Climates of the Past

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus. Lecture and practical classes.
Time Commitment:	Contact Hours: Two 1-hour lectures per week; one 2-hour practical class per week. Total 48 hours. Total Time Commitment: 120 hours total time commitment.
Prerequisites:	*The Earth, Atmosphere and Oceans.* Plus one of *Calculus 2* or 620-143 Applied Mathematics (prior to 2009). Plus *Weather and Climate Systems* (can be concurrent)
Corequisites:	None
Recommended Background Knowledge:	At least one of *Vector Calculus*, *Dynamical Systems and Chaos*, *Vector Analysis* or *Mathematical Methods* is recommended.
Non Allowed Subjects:	625-332 Climate: Mechanisms and Variability (prior to 2009).
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Prof Ian Simmonds
Subject Overview:	The main area of study in this subject is the broad description of climates from the past treated in a global context. Emphasis will be placed on the physical processes responsible for those climates and their variability. The topics to be covered in the subject include a broad geological-scale view of climate. Factors which influence climate, including external and geological factors, land - ice - ocean - atmosphere interactions, and stochastic effects. Energy balance models and ‘snowball’ earth. Development and decay of Ice Ages, and the role of Antarctica and the northern latitude continents. The global thermohaline circulation. Sea level variations, and the hydrological cycle. The use of paleoclimate data proxies, including foraminifera, fossils, tree rings, isotopes and the theoretical underpinnings of these. The associations between carbon dioxide and climate change.
Objectives:	The objectives of this subject are to present a comprehensive picture of how global climates have changed in the past and to explore the mechanisms responsible for those changes. It also has the objective of exploring how climate maintenance is influenced by specific issues such as greenhouse gases, ocean circulation, and the presence of Antarctica.
Assessment:	Literature survey (1000 words) and three problem sets during semester (totaling 1000 words) (40%); a 2-hour written examination in the examination period (60%). (The literature survey will be set in the first half of semester and due on the last day of semester. The problem sheets will be set at approximately equal intervals during semester and three weeks will be allowed for their completion.)
Prescribed Texts:	None
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2009/D09)**

	# **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2009/A04)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	On completion of this subject students should have developed the following generic skills: An ability to comprehend the workings of complex systems and the workings and connectedness of the climate system as a whole.
Notes:	Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject.
Related Majors/Minors/ Specialisations:	Atmosphere and Ocean Sciences