

# ATOC30005 Global Climates of the Past

Credit Points:	12.50																							
Level:	3 (Undergraduate)																							
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Lecture and practical classes.																							
Time Commitment:	Contact Hours: 1 x two hour lecture per week; 1 x two hour practical class per week Total Time Commitment: Estimated total time commitment of 120 hours																							
Prerequisites:	<div>One of</div> <div># 625-104 The Earth, Atmosphere and Oceans (prior to 2010)</div> <div># 625-103 The Atmosphere and Oceans (prior to 2008)</div> <table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>ERTH10002 Understanding Planet Earth</td><td>Semester 2</td><td>12.50</td></tr></table> <div>Plus</div> <div>(this subject may be taken concurrently)</div> <table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>ATOC20001 Weather and Climate Systems</td><td>Semester 1</td><td>12.50</td></tr></table> <div>Plus one of</div> <div># 620-143 Applied Mathematics (prior to 2009)</div> <table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>MAST10009 Accelerated Mathematics 2</td><td>Semester 2</td><td>12.50</td></tr><tr><td>MAST10006 Calculus 2</td><td>Semester 1, Semester 2</td><td>12.50</td></tr></table>			Subject	Study Period Commencement:	Credit Points:	ERTH10002 Understanding Planet Earth	Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	ATOC20001 Weather and Climate Systems	Semester 1	12.50	Subject	Study Period Commencement:	Credit Points:	MAST10009 Accelerated Mathematics 2	Semester 2	12.50	MAST10006 Calculus 2	Semester 1, Semester 2	12.50
Subject	Study Period Commencement:	Credit Points:																						
ERTH10002 Understanding Planet Earth	Semester 2	12.50																						
Subject	Study Period Commencement:	Credit Points:																						
ATOC20001 Weather and Climate Systems	Semester 1	12.50																						
Subject	Study Period Commencement:	Credit Points:																						
MAST10009 Accelerated Mathematics 2	Semester 2	12.50																						
MAST10006 Calculus 2	Semester 1, Semester 2	12.50																						
Corequisites:	None																							
Recommended Background Knowledge:	<div>At least one of</div> <div># 620-296 Multivariable and Vector Calculus (prior to 2010)</div> <div># 620-231 Vector Analysis (prior to 2009)</div> <div># 620-233 Vector Analysis Advanced (prior to 2010)</div> <div># 620-232 Mathematical Methods (prior to 2010)</div> <div># 620-234 Mathematical Methods Advanced (prior to 2009)</div> <table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>MAST20009 Vector Calculus</td><td>Semester 1, Semester 2</td><td>12.50</td></tr><tr><td>MAST20019 Dynamical Systems and Chaos</td><td>Semester 2</td><td>12.50</td></tr></table>			Subject	Study Period Commencement:	Credit Points:	MAST20009 Vector Calculus	Semester 1, Semester 2	12.50	MAST20019 Dynamical Systems and Chaos	Semester 2	12.50												
Subject	Study Period Commencement:	Credit Points:																						
MAST20009 Vector Calculus	Semester 1, Semester 2	12.50																						
MAST20019 Dynamical Systems and Chaos	Semester 2	12.50																						
Non Allowed Subjects:	<div>Students may only gain credit for</div> <div># 625-332 Climate: Mechanisms and Variability (prior to 2009) or;</div>																							

	Subject	Study Period Commencement:	Credit Points:
	ATOC30005 Global Climates of the Past	Semester 1	12.50
<b>Core Participation Requirements:</b>	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>		
<b>Coordinator:</b>	Prof Ian Simmonds		
<b>Contact:</b>	<b>Email:</b> <a href="mailto:simmonds@unimelb.edu.au">simmonds@unimelb.edu.au</a> ( <a href="mailto:simmonds@unimelb.edu.au">mailto:simmonds@unimelb.edu.au</a> )		
<b>Subject Overview:</b>	<p>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.</p> <p>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.</p>		
<b>Objectives:</b>	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.		
<b>Assessment:</b>	Literature survey (1000 words) (20%) and two practicals (both 3%) and two problem sets (both 7%) during semester (not exceeding 1000 words in total); a 2-hour written examination in the examination period (60%). The literature survey will be set in the first half of semester and due at the end of semester. The practicals and problem sets will be set at approximately equal intervals during semester.		
<b>Prescribed Texts:</b>	None		
<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2011/B-ARTS">https://handbook.unimelb.edu.au/view/2011/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2011/B-COM">https://handbook.unimelb.edu.au/view/2011/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2011/B-ENVS">https://handbook.unimelb.edu.au/view/2011/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2011/B-MUS">https://handbook.unimelb.edu.au/view/2011/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>		
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>		
<b>Generic Skills:</b>	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.		

<b>Notes:</b>	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BASc or a combined BSc course.
<b>Related Course(s):</b>	Bachelor of Science
<b>Related Majors/Minors/ Specialisations:</b>	Atmosphere and Ocean Science Physical (Environmental Engineering) Systems Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses