ERTH90026 Climate Modelling and Climate Change

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours Total Time Commitment: 120 hours
Prerequisites:	

Subject	Study Period Commencement:	Credit Points:
ENGR90028 Introduction to Energy Systems	Semester 1	12.50
ENGR90029 Analysing Energy Systems	Semester 1	12.50

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Contact:	Dr Roger Dargaville rogerd@unimelb.edu.au
Subject Overview:	This subject describes the physics of the climate system, and how the system is represented in numerical models. Key aspects include - # Radiation balance (Stefan-Boltzmann and Planck's Law, albedo) # Carbon dioxide and water vapour absorption spectra # Heat and momentum fluxes and atmospheric circulation # Fossil fuel and land-use emissions # The global carbon and hydrological cycles # Effects of clouds and aerosols It covers aspects of uncertainty and chaos to understand why climate models are imperfect but invaluable tools. Students will build a simple climate model and run numerical experiments with different greenhouse gases. The subject will also briefly discuss the processes of the United Nations Framework Convention on Climate Change (UNCCC) and Intergovernmental Panel on Climate Change (IPCC), in particular how the scientific consensus of the IPCC assessment reports is reached.
Objectives:	On completion of this subject students will be able to - # Debate the reality of climate change in both a qualitative and quantitative manner # Develop simplified climate models and make projections of future climate change # Assess different climate models currently in use, including quantification of uncertainty and its implications for future projections

Assessment:	Assessment will be a write-up of 6 of the tutorial exercises (500 words each, 50%) and a 2 hour end of semester exam (50%)
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# The ability to communicate effectively with the community at large # Understanding of the social, cultural, global and environmental responsibilities of a professional, and the need for sustainable development
Related Course(s):	Master of Energy Systems