

Climate Change

GRG 333K, Spring 2013
MWF 11AM in CLA 1.108



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Course Description: This course will survey the causes of changes in climatic systems over both short and long time periods and their consequences for landscape dynamics, biogeography, land use, sustainability, and vulnerability. The first part of the course will introduce the study of climates from an earth systems approach. Implications of differences in climate for carbon, biodiversity, and humans will be discussed. The second part of the course will look at historical and current climate change trends and controls worldwide, including coverage of the different scientific methods used for studies of these processes. We will build towards developing the expertise to critically evaluate future climate scenarios using environmental and socio-ecological approaches.

Students are expected to read the assigned readings and participate actively in class. The exams will test knowledge, vocabulary, and ability to explain and apply information. The class projects and writing assignment will work on the ability to synthesize and communicate on scientific issues associated with climate change.

Prerequisites: Assumes background from GRG 301C, GRG 301K, or an equivalent course.

Required textbooks:

D. Archer. 2009. *The Long Thaw: How Humans are changing the Next 100,000 Years of Earth's Climate*. Princeton University Press, Princeton. ISBN 978-0-691-14811-3 (paperback).

K. Richardson, W. Steffen, and D. Liverman (eds.). 2011. *Climate Change: Global Risks, Challenges and Decisions*. Cambridge University Press, Cambridge. ISBN 978-0-521-19836-3 (hardback; a digital version is also available).

Grading:

Two exams (vocabulary, short answer/essay)---200 points (100 points each).

Nine in-class projects/discussions---90 points (10 points each).

One written independent project---40 points

Final letter grades for the course are assigned by percentages of the 330 total possible points: $\geq 92\%$ =A; 90-91.99%=A-; 88-89.99%=B+; 82-87.99%=B; 80-81.99%=B-; 78-79.99%=C+; 72-77.99%=C; 70-71.99%=C-; 68-69.99%=D+; 62-67.99%=D; 60-61.99%=D-; <60 =F.

The exams are based on the assigned readings, the lectures, and the class discussions and projects. Note that the University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities; for more information, contact the Office of the Dean of Students (471-6259, 471-4641).

The final 40-point project is a three (or four) page essay on one of two possible chapters (14 or 16) in the Richardson et al. textbook, to be done independently and due on the last day of class, along with a brief informal oral presentation of findings to the class on either 1 or 3 May. You should briefly summarize the main points in the chapter you have chosen, and then explain what specific research and policy changes are necessary, in your opinion, to carry out the adaptation and development called for. Cite any sources you use in the same manner as is done in the Richardson et al. textbook. Note that this assignment replaces the final exam and so must show mastery of the topics covered in the semester.

Course schedule:

<u>Dates</u>	<u>Topics</u>	<u>Readings</u>
14 January	Introduction	
16-18 January	Global climate systems	Chap. 1
21 January	Martin Luther King Day	
23 January	Oceans, Ice	Chaps. 2, 3
25 January	Class project #1	Archer Chaps. 1-3
28-30 January	Oceans, Ice	Chaps. 2, 3
1 February	Class project #2	Archer Chaps. 4-5
4- 6 February	Carbon	Chap. 4

8 February	Class project #3	Chap. 11
11-18 February	Biodiversity, Land use	Chap. 6
20 February	Review	
22 February	Exam #1	
25-27 February	Interactions	Chap. 7
1-6 March	Targets	Chap. 8
8 March	Class project #4	Archer Chaps. 6-7
11-15 March	Spring Break	
18-20 March	Equity, Economics	Chaps. 9, 12
22 March	Class project #5	Archer Chaps. 8-9
25-27 March	Governance	Chaps. 10, 13
29 March	Class project #6	Chap. 17
1-5 April	Adaptation	Chap. 15
8-13 April	TBA	
15 April	Anthropocene	Chap. 17
17 April	Review	
19 April	Exam #2	
22 April	Future change	Archer Chaps. 10-12
24 April	Class project #7	Chaps. 14, 16
26 April	Class project #8	Chaps. 14, 16
29 April	Class project #9	Chaps. 14, 16
1-3 May	Independent projects with in-class presentation	



Temperature?

Time