
GEOG 503, Climate Change, Fall 2007

Timetable: Lecture Tues & Thurs 11:00-12:30 ES 443

Prerequisite: Only GEOG 305 is required. We will introduce several topics in oceanography that are covered in the other suggested course, GEOG 403 (Physical Oceanography), but we will introduce these fresh in GEOG 503.

Instructor: Shawn Marshall
Earth Science 404 Office Hours: TR 13:00-15:00 or by appointment
Telephone: 220-4884 E-Mail: shawn.marshall@ucalgary.ca

Synopsis

The best description of this year's course offering is "Earth's climate system: Lessons from the past and implications for where we are heading." We will start with a review of the global climate system and its interconnected components (ocean, atmosphere, biosphere, cryosphere, biogeochemical cycles). This will include considerable focus on external climate forcings and internal climate feedback processes. We will then sweep over Earth's incredible paleoclimatic history, from climates of the deep past (e.g. snowball Earth) to the Pleistocene Ice Age to the more subtle recent climate excursions of the Medieval warm period and the little ice age. Ice Ages are fascinating so we will have a bit of a special focus on glaciers, ice sheets and ice core paleoclimatology. The last few weeks of the class will be spent on 20th century climate change, forecasts for this century, and a general discussion of natural vs. anthropogenic forcing.

Text: *Earth's Climate: Past and Future* (2001), W.F. Ruddiman, W.H. Freeman and Company, New York. On order at the bookstore. ISBN 0-7167-3741-8; QC981.R76 2000.

The text is required. Other literature resources will be provided in class (e.g., parts of the IPCC (2001) Climate Change Assessment; selected research literature).

SUPPLEMENTAL REFERENCES

Oceanography: An Invitation to Marine Science (2005), T.S. Garrison.

IPCC (2007), J. T. Houghton (Ed.), Intergovernmental Panel on Climate Change 4th Assessment Report: Working Group 1 Report on the Physical Basis of Climate Change. World Meteorological Organization and United Nations Environmental Program. Cambridge University Press. <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>

Climate System Modelling (1993), K. Trenberth (Ed.), Cambridge University Press.

A Climate Modelling Primer, 2nd Edition (1997), K. McGuffie and A. Henderson-Sellers, Wiley and Sons, New York.

Understanding Weather and Climate, 3rd Edition (2004), E. Aguado and J.E. Burt, Pearson Education Inc., Upper Saddle River, New Jersey.

Ice Ages: Solving the Mystery (1986), J. Imbrie and K.P. Imbrie, Harvard University Press.

COURSE EVALUATION

Grade Summary:	Midterm exam	20 %
	Assignments (two)	30 %
	Research presentation	20 %
	Final Exam	30 %

Assignments:

There will be two take-home assignments, worth 15% each. These exercises will be based on analysis of weather and climate data and some of the theoretical material that we cover in class. They will be fairly extensive, requiring ca. 10 hours each of hands-on (e.g. Excel) analysis.

Research Paper Presentation:

Each of you will be asked to critique and present a short paper from the research literature (generally *Science* or *Nature* articles). We will begin these class presentations on October 2 and they will continue until our final week of class. Working in pairs, you will be required to give a short (ca. 15-minute) class presentation summarizing and critically assessing an assigned reading. Your presentations will be posted on Blackboard, where they will be available to all students in the class. The topics for these papers will be part of the core material covered in the class, so all students are responsible for the material to be covered (i.e. it may appear on exams). I will assign the papers/topics, to ensure that class discussions span the full range of course material. I hope for engagement from each of you, through either classroom or Blackboard discussions of each student's paper. Expectations for the presentation will be discussed further in class. Evaluation will be equally based on your presentation (10%) and your participation/discussion in other students' papers (10%).

Exams:

There will be one midterm exam in class, based on the lecture material and reading assignments, worth 20% of your final mark. This will be a closed book exam, made up of a blend of short answer and essay questions. Midterm Date: Thursday, October 25.

There will be a final exam, worth 30%, to be scheduled by the Registrar. The format will be similar to the midterm exam.

Grading System:

92-100	A+	75-79	B	60-64	C-
86-92	A	71-75	B-	55-60	D+
82-86	A-	68-71	C+	50-55	D
79-82	B+	64-68	C	0-50	F

A+	4.00	Outstanding performance
A	4.00	Excellent performance; comprehensive understanding
A-	3.70	↑
B+	3.30	↑
B	3.00	Good - Above-average performance
B-	2.70	↑
C+	2.30	↑
C	2.00	Satisfactory performance – basic understanding of the subject
C-	1.70	
D+	1.30	
D	1.00	Minimal pass – marginal performance
F	0	Fail – poor performance

For additional detailed course information posted by the Instructor see Blackboard at:
<http://blackboard.ucalgary.ca/>

Plagiarism

Academic dishonesty is not an acceptable activity at the University of Calgary and students are **strongly advised** to read the Student Misconduct section in the University Calendar. Quite often, students are unaware of what constitutes academic dishonesty or plagiarism. The most common are 1) presenting another student's work as your own 2) presenting an author's work or ideas as your own without proper referencing and 3) using work completed for another course. This activity will not be tolerated in this course and students conducting themselves in this manner will be dealt with according to the procedures outlined in the calendar.

Disability Resource Centre Accommodations

It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Re: Posting of Grades and Picking-up of Assignments

- All assignments will be handles on Blackboard.
- Their own grades will be available to each student on Blackboard by password access. Grades will **not** be available at Geography's main office.

Contact Information for Student and Faculty Representation

- SU VP Academic Phone: 220-3911 and e-mail: suypaca@ucalgary.ca
- SU Faculty Rep. Phone: 220-3913 and e-mail: socialscirep@su.ucalgary.ca

Campus Safewalk

Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day, to any location on Campus including the LRT, parking lots, bus zones and University residences. Contact Campus Security at 220-5333 or use a help phone, and Safewalkers or a Campus Security officer will accompany you to your Campus destination.

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