Climate Change

GRG 333K, Fall 2017
TTh 8 AM in CLA 0.104

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kryoung@austin.utexas.edu; Office hour: Tuesday, 2 PM or by appointment
TA: Sara Diamond, sdiamond@utexas.edu

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 look at historical and current climate change trends and controls worldwide, including coverage of the different scientific methods used for studies of these processes. The second part of the course will evaluate the study of climates from an earth systems approach. Implications of differences in climate for carbon, biodiversity, and humans will be discussed. 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:
**Additional resources:**

**Grading:**
Two exams (vocabulary, short answer/essay)---200 points (100 points each).
Seven in-class projects/discussions---70 points (10 points each).
One written independent project---40 points

Final letter grades for the course are assigned by percentages of the 310 total possible points: 
>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 two exams are based on the assigned readings, the lectures, and the class discussions and projects.

The seven in-class projects are worth a possible ten points each; they require active participation in a group project that is presented to the rest of the class that same day, and submitted as a short paper at the end of the respective class session.

The final 40-point project is to be a five page.double spaced independent essay summarizing one research paper of your choice published in the last three years in the journal *Climatic Change* (must be labeled as “OriginalPaper”). Note that this essay replaces the final exam, and so should demonstrate your knowledge of materials covered in the entire semester. It should be well written, explaining the methods used and results found by the researcher(s), plus including a discussion of the significance of this kind of research for understanding climate change. Each student chooses one research paper; let the TA know of your choice as nobody else can evaluate the same paper. The essay is due on the last day of class, along with a brief informal oral presentation of findings to the class on either 5 or 7 December (worth 10% of the 40 points). Give the full citation of the article at the end of your essay, along with any other references you may have utilized.

**Course schedule:**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topics</th>
<th>Readings</th>
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<tbody>
<tr>
<td>31 August</td>
<td>Introduction</td>
<td>Mann Intro</td>
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<tr>
<td>5-7 Sept.</td>
<td>Global climate systems</td>
<td>Mann Part 1 (IPCC Ch. 1)</td>
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12 Sept.   Atmosphere   Archer Ch. 1-3 (IPCC Ch. 2)
14 Sept.  **Class project #1**   Sovacool Ques. 1
19-21 Sept. Oceans, Ice   Mann Part 2 (IPCC Chaps. 3-4)
26 Sept.  Paleoclimate   Archer Ch. 4-7 (IPCC Chap. 5)
28 Sept. **Class project #2**   Sovacool Ques. 2-3
3 October  Paleoclimate   Archer Ch. 4-7 (IPCC Chap. 5)
5 October  Review
10 October  **Exam #1**
12 October  Carbon   Archer Ch. 8-10 (IPCC Chap. 6)
17 Oct.  Clouds, Radiative forcing   Mann Part 3 (IPCC Chaps. 7-8)
19 October  **Class project #3**   Sovacool Ques. 4-7
24-26 Oct. Climate predictions   Archer Ch. 11-12 (IPCC Chap. 9)
31 October **Class project #4**   Sovacool Ques. 9
2 November  Attribution   Mann Part 3 (IPCC Chap. 10)
7 November  **Class project #5**   Sovacool Ques. 10
9 November  Review
14 Nov.  **Exam #2**
16 November  Future change   Mann Part 4 (IPCC Chaps. 11-13)
21 November  **Class project #6**   Sovacool Ques. 12-13
23 November  THANKSGIVING BREAK
28 November  Future change   Mann Part 5 (IPCC Chaps. 11-13)
30 November  **Class project #7**   Sovacool Ques. 14-15 (IPCC Chap. 14)
5-7 December  Independent projects with in-class presentation
Temperature? Time

Course policies:

Attendance and Participation: Students are expected to attend every class and actively participate in discussions and any in-class projects. There will be no make-up exams or assignments. Extreme situations will be considered if brought to the instructor’s attention as early as possible.

Documented Disability Statement: 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 at 512-471-5017 or deanofstudents@austin.utexas.edu.

Religious Holy Days: By UT Austin policy, you must provide notification of a pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class day for this reason, you will have an opportunity to complete the missed work within a reasonable time period.

Honor Code: Students are expected to uphold the University of Texas’ Academic Honor Code: “As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.”

Intellectual integrity is expected in all work. Collaboration and the use of a wide range of references is encouraged, but any plagiarism, use of un-cited materials, or un-credited project assistance will result in a recommendation of course failure. If you have any questions about what is acceptable and what is not, please ask. Also see: http://www.lib.utexas.edu/services/instruction/learningmodules/plagiarism/

Violations of the UT honor code, including cheating or plagiarism, will result in: 1) a zero for the assignment/exam; 2) an assigned ‘F’ for the final grade; and/or 3) notification to the UT Academic Judiciary Committee for further disciplinary measures.
Behavior Concerns Advice Line (BCAL): If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual’s behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counselling and Mental Health Centre (CMHC), the Employee Assistance Program (EAP), and the University of Texas Police Department (UTPD). Call 232-5050 or visit http://www.utexas.edu/safety/bcal.

Decorum: Computers and phones should be silenced (no vibration or ring). If you take notes on a laptop, the expectation is that you are fully engaged with the class and not reading the news, checking social media sites, doing homework for another class, or otherwise browsing the internet.