GEO 302C – Climate: Past, Present, Future (Spring 2014)
Location: CLA 0.126
Time: MWF 9:00-10:00
Professor: Tim Shanahan
Office: Schoch 3.126 (Shanahan)
Office hours: Monday 3:30-5:00 (Shanahan)
E-mail: tshanahan@jsg.utexas.edu
Phone: 232-7051 (Shanahan)

Textbooks

BlackBoard Use
PowerPoint lectures and lab handouts are available on BlackBoard. It is expected that you have a computer with internet access or that you have access to these facilities.

Overview:
This is an introductory-level course intended for non-science majors. Lecture times are MWF 9-10am, room 0.126 in the Liberal Arts Building, plus one 1.5-hour discussion section in room 2.308 Geology Building.

Course content:
Climate history of the Earth and the reasons behind Earth's climate change, including the physical concepts and climate processes that control heat and mass transfers in the atmosphere; the role of oceans; scales of climate change including tectonic-scale, orbital-scale, glacial and millennial-scale, historical and future climate change; global warming; human effects on climate; health impacts of climate change; ecosystem impacts

Course Credit:
This course may be used to fulfill three hours of the natural science and technology (Part I or Part II) component of the common core curriculum and addresses the following four core objectives established by the Texas Higher Education Coordinating Board: communication skills, critical thinking skills, teamwork, and empirical and quantitative skills.

Policy on Grades:
Final Grades: Your final letter grade will be based on your total score from exams and labs. Grades are assigned using a standard curve that reflects the accomplishment of the class as a whole. The percentage-letter grade relationship will usually be: >90 A, 80-89 B, 70-79 C, 60-69 D, and < 60 F. Your attendance will affect your final grades.
Exam (55%): three midterms and one final exam will be given. All three midterm exams and the final exam must be taken. Your best two midterm scores plus the final exam score will be counted as 55% of your final grade - i.e., you may drop you one lowest midterm score, but not the final exam score. The Exam Schedule is on the web. Exams are given only once. There are NO make-up exams, NO extra-credit in lectures and labs, and NO specially scheduled exams. Exceptions may be made for students with disabilities, but they must request any special arrangements early in the semester. All exams are cumulative in their coverage. They will cover material from lectures and reading assignments. You will be asked questions about general concepts as well as specific points of information.

YOU MUST BRING YOUR UT Id CARDS TO ALL EXAMS. ALL NECESSARY MATERIALS EXCEPT PENCILS AND ERASERS WILL BE PROVIDED.

Lab Assignments (30%): Lab assignments must be turned in on time, at the beginning of your assigned lab section. Lab assignments turned in late will receive 0 credit. Your cumulative score from lab assignments will be counted as 30% of your final grade.

Attendance and participation (15%): We will be using the clicker in class as a mechanism for stimulating participation. You are required to bring your clicker to class every day and your participation in class will be logged using the response from your registered clicker.

Attendance: Your success in this course depends on your class and lab attendance. Excessive absences will work against you, while perfect attendance can help you to the next highest letter grade in borderline situations at the end of the semester. We typically find that students who reply only on class notes, without attendance, perform poorly on exams and in the class in general.

Statute of Limitations: If you wish to appeal a grade received on an exam, or lab, your appeal must be made within 7 days from the time it is handed back. No appeals will be considered after that deadline.

The University Honor Code: “The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.”

Students are expected to read and to strictly adhere to the University’s written policies on academic dishonesty. Cheating or plagiarism will result in a zero for the semester.

A note to students with disabilities: students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259.
<table>
<thead>
<tr>
<th>Class</th>
<th>Topic</th>
<th>Text reading</th>
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<tr>
<td>1</td>
<td>01-Introduction</td>
<td>NA</td>
<td>Class syllabus</td>
<td>no lab</td>
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<td>2</td>
<td>02-Weather vs Climate</td>
<td>Ch. 1, p. 1-16</td>
<td>No class meeting Holiday</td>
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<td>3</td>
<td>03-Climate Variability</td>
<td>Supp. chapter 1</td>
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<td>4</td>
<td>04-Energy Balance I</td>
<td>Supp. Chap. 2; pp. 1-5</td>
<td>Lab 1-Intro + weather v climate</td>
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<td>5</td>
<td>05-Energy Balance II</td>
<td>Supp. Chap. 2; pp. 1-5</td>
<td>no lab</td>
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<td>6</td>
<td>06-Atmosphere I</td>
<td>Supp. Chap. 2; pp. 15-22</td>
<td>no lab</td>
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<td>07-Atmosphere II</td>
<td>Supp. Chap. 2; pp. 15-22</td>
<td>no lab</td>
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<td>8</td>
<td>08-Hydrological Cycle</td>
<td>Supp. Chap. 2; pp. 10, 16-17, 21, 31-32, 34</td>
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<td>09-Atmo Circulation</td>
<td>Supp. Chap. 2; pp. 15-22</td>
<td>no lab</td>
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<td>10-Ocean Circulation</td>
<td>Supp. Chap. 2; pp. 22-24</td>
<td>no lab</td>
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<td>11</td>
<td>11-Ocean Circulation</td>
<td>Supp. Chap. 2; pp. 24-27</td>
<td>Lab 3 Energy Budget</td>
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<td>12</td>
<td>11-Air Sea interactions</td>
<td>Ch 16 p. 299-302; Ch 17 p. 321-324</td>
<td>no lab</td>
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<td>11a-Hurricanes</td>
<td>Supp. Chap. 2; pp. 22-27</td>
<td>no lab</td>
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<td>15</td>
<td>12-Cryosphere</td>
<td>Ch 2 p. 21; C10 p. 176-177</td>
<td>Lab 5-air sea interactions</td>
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<td>16</td>
<td>13-Biogeochem 14-Paleoclimate Proxies</td>
<td>Ch 3 p. 46-47; p. 53-58</td>
<td>no lab</td>
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<td>17</td>
<td>15-Stable isotopes 16-Radiocarbon 17-High resolution records</td>
<td>Appendix I: p. 360-361; Ch. 6.2, p. 100-101</td>
<td>Lab 6 Productivity</td>
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21 18-Tectonics and climate  
    Ch. 4, 64-67,  
    71-80, Ch. 5, p.  
    81-86;  
    no lab

22 19-Orbital climate  
    Part III, p. 116- 
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    Chapter 8 (137- 
    153)  
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23 20-Ice sheets  
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24 21-ice cores  
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    191-205)  
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25 22-Pleistocene ice ages  

26 23-Last Glacial Maximum  
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28 EXAM 2  

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25-Millennial variability  

30 25a-Holocene  
    Part V, p. 270- 
    271; Chapter 16  
    (p. 287-308)

31 26-Historical climate  
    Chapter 16 (p.  
    303-306)  
    Lab 10-modern CO2

32 27-Volcanoes and sunspots  
    Chapter 16 (p.  
    309-324)  
    Lab 11 - Weather

33 28-Instrumental climate  

34 29-Culture and climate  

35 30-Climate and health  
    Chapter 18 (p.  
    325-335)  
    Lab 12 - prep for  
    presentation

36 31-Greenhouse gases  
    Chapter 18 (p.  
    325-335)  
    Lab 12 - prep for  
    presentation

37 32-Greenhouse debate  
    Chapter 18 (p.  
    325-335)

38 TBD  

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