Geog 147 **Fall 2015**

Communicating Climate Science

Fall 2015 Course Information

Instructors

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Units: 3

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Course Description: For upper division undergraduate students interested in improving their conceptual understanding of climate science and climate change through engaging in activities, demonstrations and discussions, while also developing their science communication skills to advance the public's climate literacy. The course will combine science content, active teaching and learning methods based on how people learn, and how to engage in effective interactions. *Prerequisites:* Prior coursework in climate change science.

Course Objectives: As a result of this course, students will be able to 1) describe and use models to illustrate the processes, interactions and mechanisms contributing to climate change; 2) demonstrate an understanding of how people learn, and the importance and impact of social, cultural and worldview belief systems on behavior related to climate change, through effectively communicating ideas and engaging in meaningful discussions with diverse, non-expert audiences.

Location: 575 McCone **Time**: Friday, 10a - 1p

Office Hours: Rhew: Tues and Wed 2-3 p.m. at 539 McCone Hall; Halversen and Weiss: by arrangement

Field Trip:
A field trip to California Academy of Sciences is planned for Friday, November 13, 2015. More information and transportation options will be provided. Participation is mandatory. If you know that you can't attend, contact the instructors; the opportunity to make it up is at the discretion of the instructors.

Required Texts:
Climate Change Science.

1. Mann, Michael E. & Kump, L.R. (2015) Dire Predictions, 2nd Edition: Understanding Global Warming 2nd edition. Pearson/DK Publishers.
2. Hoffman, Andrew. (2015) How culture shapes the climate change debate. Stanford Univ. Press.
3. Most current IPCC Report: www.ipcc.ch

Learning Sciences. For learning sciences content, we will use the following two books from the National Academies Press. Assigned chapters can be downloaded from bCourses or directly from the National Academies Press website (http://www.nap.edu/).

1. Fenichel, M and HA Schweingruber. (2009) Surrounded by Science: Learning Science in Informal Environments. The National Academies Press.
2. Michaels, S., Shouse, A. and Schweingruber, H. (2007) Ready, Set, SCIENCE!: Putting Research to Work in K–8 Science Classrooms. The National Academies Press.

Additional required readings will be available on bCourses for download.

GRADING: 653 points total

Participation in whole-class and small group discussions is very important in this course, which means you need to attend class and the field trip. Your Understanding of the learning research and science briefings will be assessed primarily through written assignments, in-class group and individual quizzes, Quick Writes, field trip reflections, and the midterm and final exams. Your Application of these ideas will be assessed mainly through presentations where you share climate science/climate change activities with others. These include two in-class (one with middle school students and another with your peers from another class) and two outside-of-class (at the Hall with visitors to the museum). See below for more information on assignments.

QUICK WRITES AND QUIZZES: 56 pts

1. **Quick Writes / Small Group Quiz – 56 points (8 points each), 7 times throughout semester**
    - Quick-writes: At the start of class, you will be given ~5 minutes to answer a question about the week's reading assignment. No make-ups for Quick Writes.
    - Quizzes: During class, you will work with a small group to complete a quiz about the reading, other homework assignment or the information presented in class.

PARTICIPATION & PRESENTATIONS : 282 pts

2. **Class Participation – 82 points, throughout the semester**
    - Participation in class discussions, both in whole-class and small group, is very important in this class and will count toward your course grade. Participation will be assessed during each of 12 class periods (not counting the first or last day of class) (72 pts). See below for more details*.
    - Nov 13 Field Trip to California Academy of Sciences (10 pts)
3. **Presentations –200 points total, 4 occasions**
    - IN-CLASS: You and your partner will present climate change activities during class two times throughout the semester. A grading rubric will be provided in advance.
        i. **Oct 30** – Present to middle school students **(50 pts)** at Lawrence Hall
        ii. **Dec 4** – Final presentation during Climate Change Day **(100 pts)**
    - OUTSIDE OF CLASS: You and your partner will present to visitors at the Hall for 2 hours on each of 2 occasions **(25 pts each/50 points total)**
        i. To be completed between **Oct 31 – December 3** Specific date and time TBD in consultation with instructors.
        ii. Video-record one of the presentations on your phone (*upload by **noon November 9th***) to Box (berkeley.box.com) so that instructors and peers can provide feedback.

WRITTEN ASSIGNMENTS: 115 pts

1. **Podcast – 20 points, due Sept 4**
    - Watch/listen to podcast and answer questions online in text box in bCourses
2. **Climate Change Exhibit Observation, Chabot or Exploratorium – 25 pts, Sept 19**
    - Visit the climate change exhibits at the Chabot Space & Science Center, Oakland or the Exploratorium, SF. Observe visitors interacting with exhibits & each other.
    - Complete the worksheet given out in class and turn in during class on Sept 19.
3. **Response to Instructor Feedback: Presentation Reflection – 25 points, due 5 days after feedback given**

- Instructors will provide feedback on one of your presentations at the Hall, either based on observing you in real-time or watching your video of your presentation. You will provide a written response to prompts provided by the instructor.

4. **Peer Review of Video – 25 points, Nov 13**
   - You will be graded on the quality and thoughtfulness of the written feedback you provide to your peers based on watching a videotape recording of their presentation at the Hall.
5. **Cal Academy Field Trip Reflections and Observations – 20 points, due Nov 13**
   - Nov 13: During your visit, you will observe visitors as they interact with each other, educators and exhibits, and record your observations. Submit your observations at the end of the trip. Also participate in a discussion with museum staff.

EXAMS: 200 pts

1. **Midterm – 100 points, Oct 2**
   - There will be a written exam on the learning/social science research, science briefings, & readings that have been assigned thus far in the class. A study guide will be provided.
2. **Final – 100 points, Monday, Dec 14, 2015 8-11A**
   - A written exam on material assigned since the midterm. A study guide will be provided.

Late and Make-Up Policies:

- Late written assignments will be accepted up to 5 calendar days after the due date, however 10% of the total possible score will be deducted for each calendar day that the assignment is late.
- In-class presentations are mandatory. If you know in advance that you cannot be present, contact the instructors to ask about scheduling a make-up. This opportunity is at the discretion of the instructors and will depend on the reason for your planned absence.

Course Participation Additional Information:

Participation in class discussions, both in whole-class and small group, is very important in this class and will count toward your course grade. 12.6% of your grade for this class is based on your participation in discussion. Participation will be assessed during each of 12 class periods (not counting the first or last day of class).

Participating in discussion does not necessarily mean talking a lot or showing everyone else that you know or have studied a lot. Good discussion participation involves people trying to build on, and synthesize, comments from others, and showing appreciation for others' contributions. It also involves inviting others to say more about what they are thinking. Some of the most helpful things you can do are call for a quiet interlude, bring a new resource to the classroom, or post an observation on line. So there are multiple ways quieter learners can participate.

Below are some specific behavioral examples of good participation in discussion:

- Ask a question or make a comment that shows you are interested in what another person says
- Ask a question or make a comment that encourages another person to elaborate on something they have already said
- Bring in a resource (a reading, web link, video) not covered in the syllabus but that adds new information/perspectives to our learning
- Make a comment that underscores the link between two people's contributions & make this link explicit in your comment
- Use body language (in only a slightly exaggerated way) to show interest in what different speakers are saying

- Post a comment on the course chat room that summarizes our conversations so far and/or suggests new directions and questions to be explored in the future
- Make a comment (online if this is appropriate) indicating that you found another person's ideas interesting or useful. Be specific as to why this was the case
- Contribute something that builds on, or springs from, what someone else has said. Be explicit about the way you are building on the other person's thoughts – this can be done online
- When you think it's appropriate, ask the group for a moment's silence to slow the pace of conversation to give you, and others, time to think
- Make a comment that at least partly paraphrases a point someone has already made
- Make a summary observation that takes into account several people's contributions & that touches on a recurring theme in the discussion (online if you like)
- Ask a cause and effect question - for example, "can you explain why you think it's true that if these things are in place such and such a thing will occur?"
- Find a way to express appreciation for the enlightenment you have gained from the discussion. Try to be specific about what it was that helped you understand something better. Again this can be done online if this suits you better

Conflicts between extracurricular activities and course requirements:

For student athletes, student musicians, those with out-of-town interviews, and other students with activities (e.g., classes missed as the result of religious holy days) that compete with academic obligations: It is the student's responsibility to notify the instructors in writing by the second week of the semester of any potential conflicts and to recommend a solution, with the understanding that an earlier deadline or date of examination may be the most practicable solution. It is the student's responsibility to inform him/herself about material missed because of an absence, whether or not formally excused.
Disabilities: Accommodation will be made for those with disabilities. Contact the Disabled Students' Program (http://dsp.berkeley.edu/), 260 César Chávez Student Center, 642-0518 (p), 642-6376 (tty) for more information. Then make an appointment to see us, or stop by during office hours, if you like.

Reminder of the Berkeley campus code of conduct

The student community at UC Berkeley has adopted the following Honor Code: "As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others." (see http://asuc.org/honorcode)

Review the campus code of conduct (http://sa.berkeley.edu/code-of-conduct), with attention to what constitutes plagiarism (http://sa.berkeley.edu/conduct/integrity):
"Plagiarism is defined as use of intellectual material produced by another person without acknowledging its source, for example:

- Wholesale copying of passages from works of others into your homework, essay, term paper, or dissertation without acknowledgment.
- Use of the views, opinions, or insights of another without acknowledgment.
- Paraphrasing of another person's characteristic or original phraseology, metaphor, or other literary device without acknowledgment."

Course Learning Goals (addressing Geography Dept. learning goals):

1.0 Spatial, holistic thinking at the intersections of society, space, and nature

1.1 Phenomena in place. Explain the spatial dimensions (location, place, landscape, region, and territory) of human life and the global environment—how human and earth science phenomena "take their place" on the surface of the earth

1.2 Earth systems. Comprehend how the earth functions as a complex system of interacting components and how this system applies to and is affected by humanity

1.3 Scales of space and time. Understand processes operating at different spatial and temporal scales in the earth system and in human histories

1.4 Nature and society. Recognize natural resource flows through human systems and identify social constructions of nature and vulnerabilities to natural disasters

1.5 Interdisciplinarity. Combine insights from the natural sciences, social sciences, and humanities to better understand the problems of our increasingly interconnected and ecologically fragile world

2.0 Addressing diversity in both human and physical geography

2.2 Physical processes. Discuss, interpret, and explain the diversity of—and the processes responsible for—the landforms, climates, and ecosystems that constitute our planet's physical landscapes.

4.0 Analysis and application for students who choose the Earth Systems Science track

4.1 Earth system science. Analyze interconnected environmental systems with process-based geophysical, geochemical, and biological sciences in the context of current social environmental problems

4.2 Modeling. Construct models of the earth as a system of interconnected components, highlighting forcings and feedbacks

4.4 Science and society. Analyze and evaluate the role of science in shaping social forces, and being shaped by them

5.0 Application of basic skills in research, knowledge of literature, analysis, and communication

5.1 Write clearly. Demonstrate ability to focus and elaborate on chosen topics

5.2 Read critically. Critically analyze and assess arguments in professional journals, public media, and advocacy literature

5.6 Analytical ability. Demonstrate analytical ability: including the ability to identify questions, differentiate descriptions from explanations, make connections between empirical observations and arguments, and differentiate between competing explanations of a given phenomenon

6.0 Lifetime skills

6.1 Continuing concern. Show continuing concern, curiosity, and zeal for geography and for applying geographical understanding

6.2 Representing geography. Represent the usefulness of geography and geographical points of view to—depending on the circumstances—prospective employers, educators, policymakers, resource managers, developers, engineers, the public, and acquaintances