

UNST 232A

Global Environmental Change

Sec. 002, CRN 43989
4 credits, Winter 2013

Instructor: Alex Ruzicka
CH 17K, 503-725-3372
email: ruzickaa@pdx.edu
Office hours: My regular office hours are Monday 11-12 and
Wednesday 11-12. Please make arrangements with me to meet
outside this time.

Mentor: Olivia Webster, email: oliviawebster@gmail.com

Location: Portland State University, main section MW 12:30-13:45, room CH225. Mentor sections (all meet in CH187): M 14:00-14:50 (CRN 43992), M 15:00-15:50 (CRN 43990), W 14:00-14:50 (CRN 43991).

Class website: <http://web.pdx.edu/~ruzickaa/climate> This website will contain a copy of this syllabus, answer keys, additional information about assignments, and other pertinent course information. It will be frequently updated. Note that the PSU-provided D2L shell will *not* be updated.

Course Description: It is increasingly evident to scientists, and even to policy makers and the general public, that global climate change may be occurring on our planet. Such climate change has major economic, societal, and political implications. But how do we know that climate is changing? And what can and should we do about it? This course will serve as an introduction to concepts relating to past and future climate change on Earth. An interdisciplinary approach will be used to examine the record of physical, chemical, and biologic changes of Earth's climate, to use this record to infer what might lie in the future, and to debate what we should do, if anything, about possible future climate change.

Course Objectives: This course has been designed in part to satisfy the objectives of the general education program at Portland State. As objectives for this one-term course, students should strive to do the following: (1) learn the evidence for climate change, (2) be able to understand and use quantitative data, (3) be able to understand and use graphs for the presentation of quantitative information, (4) develop effective communication skills in oral presentations to the class, (5) understand the limitations of climate models, (6) become aware of current developments on environmental topics, and (7) be able to marshal arguments for or against a climate change proposition in group debates.

Requisites: No prerequisites, although co-registration in an accompanying mentor section is required.

Text: *Earth's Climate— Past and Future*, 2nd Ed., by William F. Ruddiman. We will be reading much of this book.

Other required supplies: Besides the textbook, you will need to purchase a ruler with a metric (centimeter or millimeter) scale, computer disks (e.g. thumb drives, CDs), and Scantron forms (3 copies of form 882-ES, the one with 50 questions on each side). We will be using the ruler for measurements of tree ring widths, the Scantron form for quizzes and a final, and computer disks to store data. All of these are available at the bookstore.

Exams: Two quizzes and a Final will be given based on lecture presentations and the required readings. These will include some combination of multiple choice and short answer. In general, make-up quizzes taken late will be scored downwards 10% unless accompanied by a doctor's note. Answers to quizzes will be posted on the class website. The Final (held Thursday, Mar 21, 12:30-14:20 in the usual classroom) will be comprehensive and will include questions recycled from the quizzes and possibly new questions as well.

Oral presentations: Each student will join one of 6 groups for the purpose of presenting material orally to the remainder of the class. The purpose of these presentations is to help students develop effective speaking and presenting skills, to develop teamwork skills, and to learn material sufficiently well to explain it to others. Each group will have 60 minutes of speaking time to present one text chapter to the class in any way they choose,



and each student will help to do one oral presentation. One electronic copy of the visual materials used in the presentation will need to be given to the instructor for posting on the class website. The instructor and Mentor will grade each student's performance based on the following: 1) whether the most important topics were covered, 2) how well material was explained to the class, 3) whether good use of visual aids were made, 4) how well the group worked as a team, 4) whether the presentation was finished in the allocated time, and 5) optional confidential comments made by group members to the instructor or mentor. Grades may be the same or different for each student depending on his/her performance. Students in the audience should not hesitate to ask questions during or after the presentation to clarify points by the presenting group. The instructor may also lead a discussion about the presented material at the end of each presentation. Resources that can help you build presentations are given on the class website.

Scrapbook: Students will compile a collection of current news items about topics related to the environment. This scrapbook will consist of copies of articles from current print media (newspaper, magazines) or current e-articles, together with short (few sentence) summaries of what the articles are about. The scrapbook will be due in three installments, with articles from each period added to the previous installment. More details will be given on the class website.

Annotated bibliography: This mentor-section assignment will be used to complement researched debates. The student's task will be to provide an annotated reference list of at least seven sources possibly relevant for a debate topic, using a combination of scholarly and mass media sources. This annotated list will be due prior to the debates. More details will be provided on the class website.

Researched debates: Students will be organized into teams to debate scientific, social, and political questions arising from studies of past climate change on Earth. Debates will take the form of in-class discussions moderated by the instructor. The purpose of these debates is to allow students to build upon material learned during the course by performing research, and to develop speaking and argument skills. Grades will be based upon 1) a debate brief that summarizes the arguments and support for a proposition including references (10% of total score for debates) 2) participation in the debate, 3) the persuasiveness of arguments, and 4) optional confidential comments made by team members to the instructor or mentor. Grades may be the same or different for each student depending on his/her performance. Additional information about the debates will be given in class and provided on the course website.

Mentor session activities: Mentor section has been designed primarily for group activities and activities that require use of a computer. Assignments will include a written introduction of yourself to the rest of the class, a tree-ring exercise that will involve measurement of tree ring spacings with a ruler and work with an Excel spreadsheet, assembly of visual materials that you will use for your group oral presentation, and research for a debate leading to an annotated bibliography. More details about these assignments will be provided on the class website. Other assignments may also be given by the mentor.

Attendance: To encourage participation in lecture and mentor classes, attendance will count as part of the final grade for *both* the lecture and mentor sections. Attendance tallies will be curved and missing an excessive number of classes will result in a poor grade. There is no way to "make up" missed classes.

Grading policies: Grading is done on a straight scale although curves will be used at my discretion. Grades will be assigned based on scores as follows: 95% or above = A, 90-94.99% = A-, 87-89.99% = B+, 83-86.99% = B, 80-82.99% = B-, 77-79.99% = C+, 73-76.99% = C, 70-72.99% = C-, 67-69.99% = D+, 63-66.99% = D, 60-62.99% = D-, less than 60% = F. I generally do not give "I" grades. Letter grades will correspond to the standards given in the PSU course catalog.

Grades will be determined from performances on:

Attendance (lecture).....	10%
Scrapbook	9%
Quizzes.....	10%
Group oral presentation.....	16%
Debates.....	15%
Final.....	20%
Mentor section*	20%

*Mentor section score includes attendance for mentor section, written introduction, the tree-ring exercise, the annotated bibliography, and other exercises assigned by the mentor.

Disabled students: If you have a disability and need an accommodation, please make arrangements with the Disability Resources Center (DRC) office (503-725-4150).

TENTATIVE COURSE OUTLINE WINTER, 2013:
(Chapter numbers given for Ruddiman text.)

Week	Monday	Wednesday	Mentor section
1	January 7: Introduction to class; Ch. 1 (overview) by instructor.	January 9 Climate system today* by instructor.	Pose for your picture; work on your bio. Discussion about potential debate topics.
2	January 14: Climate system today* continued, by instructor	January 16: January 23: Ch 2 (climate archives), by instructor	Hand in your bio ; form groups for oral presentations & start to work on tree-ring exercise. Discussion about debate topics.
3	January 21: MLK Holiday, No Class	January 23: Installment 1 of scrapbook due. Appendix 1 (O-isotopes), by instructor.	Work on tree-ring exercise/oral presentations. Discussion about debate topics.
4	January 28: Ch. 3-6 (highlights: Greenhouse Effect, Faint Young Sun, chemical weathering, plate tectonics) by instructor.	January 30: Quiz 1. Class discussion: oral presentations & debate topics. Decide on topics.	Work on tree-ring exercise/oral presentations.
5	February 4: Tree-ring exercise due. Ch. 7 (astronomical control of solar radiation) by student Group 1.	February 6: Ch. 10 (carbon dioxide & methane) by student Group 2.	Work on oral presentations/research for debates & brief & bibliography.
6	February 11: Ch. 12 (last glacial maximum) by student Group 3.	February 13: Ch. 13 (climate during last deglaciation) by student Group 4.	Work on oral presentations/research for debates & brief & bibliography.
7	February 18: Ch. 15 (humans and pre-industrial climate) by student Group 5.	February 20: Installment 2 of scrapbook due. Ch. 16 (climate changes during the last 1000 years) by student Group 6.	Research for debates & brief & bibliography.
8	February 25: Annotated bibliography due. Ch. 17 & 18 (climatic changes since the 1800s; causes of warming) by instructor.	February 27: Quiz 2. Class discussion about debates.	Research for debates & brief & bibliography.
9	March 4: Ch. 19 (future climatic change) by instructor.	March 6: Debates 1 & 2.	Research for debates & brief.
10	March 11: Debates 3 & 4.	March 13: Debates 5 & 6. Installment 3 of scrapbook due.	Study for final, complete course survey.
Finals			Final Exam Thursday, March 21, 12:30-14:20

* This will cover Chapter 2 of the first edition, available at www.whfreeman.com/ruddiman2e

ACKNOWLEDGMENT OF SYLLABUS RECEIPT

UNST 232 CRN 43989 Global Environmental Change, Winter 2013 PSU

I have received a copy of the course syllabus for this class, and the instructor has discussed the contents of this syllabus.

Name (please print) _____
Last First MI

Signature _____ Date _____

Contact information:

A phone number where you can be reached: _____

e-mail address (important): _____

Which mentor section will you be attending? Please circle one of the following:

Monday 14:00

Monday 15:00

Wednesday 14:00

What field are you majoring (planning to major) in?

Why did you choose to take this particular class?

Are you a disabled student that needs an accommodation?