

AOS/IES 171

Fall 2012

3 credits

GLOBAL CHANGE: ATMOSPHERIC ISSUES AND PROBLEMS

TTh 2:30-3:45 pm AOSS 811

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Web page: <https://learnuw.wisc.edu/> (login with your NetID to access course)

Course Materials

- Required: Oreskes, Naomi and Erik Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*, Bloomsbury Press, 978-1596916104 (\$18)
- Required: Alley, Richard. *Earth: The Operators' Manual*, WW Norton, 978-0393081091 (\$18)
- Optional: Mackenzie, Fred T. *Our Changing Planet: An Introduction to Earth System Science and Global Environmental Change* (4th Edition) (Paperback) Prentice Hall, ISBN: 978-0321667724 (\$100)
- Lecture slides (posted at web site), Space Sciences library reserve, and course articles

Course content

The ability of humans to alter the composition of the air we breathe has never been greater. In this course, we will investigate how scientists understand the elements of global climate and atmospheric change, how we observe and predict the effect of these changes on society, and what policy options there are.

The course requires a combination of in-class discussion and out-of-class material (written, video, and others) to explore this theme. We will focus both on scientific understanding and uncertainties, since it is the uncertainties that make discussion about whether and how to change human behavior so complicated, and also on underlying human issues that drive global change. Human psychological, social, and industrial factors are inextricably intertwined with global change issues. These factors guide the strategies that might be best for society.

By the end of this course, you should be able to knowledgeably debate questions such as:

- How does past climate change contrast to modern climate change?
- Is increased hurricanes frequency a sign of anthropogenic warming or just natural variability?
- Do the benefits of CFCs outweigh the costs on increased skin cancer from decreased ozone?
- Can government regulation influence the size of the stratospheric ozone hole?
- Is acid rain related to regional cooling?
- Are all aerosols harmful to human health?
- Do forestry/agriculture practices influence global climate?
- Will climate change alter the state of human disease, food, and water supply?
- Can choices in energy consumption affect environmental degradation and international conflict?
- Are scientists and/or the media biased in their research and reporting of global change issues?

Grading

25% Bi-weekly 2 page writing response assignments (6 – 2 lowest dropped)

25% Bi-weekly quizzes (6 – 2 lowest dropped)

25% Weekly graded debates and discussion (14 – 4 lowest dropped)

25% Longer (5-6 page) written assignments (2)

Letter grade distribution to be determined at a later date and presented in class. To get the most out of this course, you will need to come to all classes, do the readings and video assignments, and participate in the discussions. Your grade is determined by these factors. Each Tuesday, I will announce the reading or video to watch and the topic of the short paper or quiz, depending on the week. On Thursday, we will discuss the paper or take and discuss the quiz.

This course meets general education requirements for Communications Part B, for which you need to write about 35 pages (including revisions), present orally, participate in discussions, and learn to listen and read critically. Writing will consist of 2-page response papers that are due in class on the dates in listed and determined by the material presented that week and also two longer papers. No late submissions will be accepted for the short writing responses. The two lowest grades will be dropped.

The longer papers will require further research, including synthesis of literature and course material. For each of these, we will have two deadlines: one for a draft and one for a final. Both are required. The drafts will be reviewed with the help of the Writing Fellows at the UW Writing Center (<http://www.wisc.edu/writing/>), who will meet with you and discuss draft improvements. No late drafts will be accepted. Meeting with the Writing Fellows is required and part of your score for the assignment.

The class also meets the UW Natural Science breadth requirements for Physical Science and for Liberal Arts and Science Credit. To meet these requirements, we will have weekly open-note short-answer and multiple-choice quizzes based on the readings and lecture material from the previous two weeks. There is no final or make-ups for missed quizzes. Two lowest quizzes will be dropped.

All written work must be handed in class as printed documents. Late submission requires prior accommodation (see below). Vacations, lack of time, or forgetfulness are not acceptable excuses.

Finally, each week we will also discuss the papers or quizzes, and also hold in-class debates. Class attendance and active participation are required to receive full points. Four lowest scores of the 14 “discussion” days will be dropped.

Accommodation Policy

Campus policy: “We believe in the right of all students who are enrolled at the University of Wisconsin-Madison to full and equal educational opportunity. Disability should not be the basis for exclusion from educational programs. All students are entitled to an accessible, accommodating, and supportive teaching and learning environment. ... Students are expected to inform faculty, in a timely manner, of their need for special instructional accommodations.”

Students requiring class accommodations due to a learning or physical disability must present documentation from the McBurney Disability Resource Center (<http://www.mcburney.wisc.edu/> ; 608-263-2741, 702 W Johnson St, Suite 2014) no later than the second week of class. Accommodations will be made in consultation with the McBurney Center.

Students who require temporary accommodations due to medical or psychological reasons should acquire documentation from University Health Services. Counseling is available from Counseling Services, University Health Services (<http://www.uhs.wisc.edu/>).

Academic Honesty

Since there is significant written and collaborative work required in this course, you should take a moment to familiarize yourself with the University academic misconduct policy. All items submitted for this course should be original works created by you and not previously submitted for another course. Minor instances of academic misconduct will be treated with requirement to repeat the offending assignment with a reduced grade. Major instances will lead to automatic failure for the course.

The University policy, excerpted below, is at:

<http://www.wisc.edu/students/saja/misconduct/UWS14.html>

“Academic honesty requires that the course work (drafts, reports, examinations, papers) a student presents to an instructor honestly and accurately indicates the student's own academic efforts.

UWS 14 is the chapter of the University of Wisconsin System Administrative code that regulates academic misconduct. UW-Madison implements the rules defined in UWS 14 through our own "Student Academic Misconduct Campus Procedures." UWS 14.03 defines academic misconduct as follows:

Academic misconduct is an act in which a student:

- seeks to claim credit for the work or efforts of another without authorization or citation;
- uses unauthorized materials or fabricated data in any academic exercise;
- forges or falsifies academic documents or records;
- intentionally impedes or damages the academic work of others;
- engages in conduct aimed at making false representation of a student's academic performance;
- assists other students in any of these acts.

Examples include but are not limited to: cutting and pasting text from the web without quotation marks or proper citation; paraphrasing from the web without crediting the source; using notes or a programmable calculator in an exam when such use is not allowed; using another person's ideas, words, or research and presenting it as one's own by not properly crediting the originator; stealing examinations or course materials; changing or creating data in a lab experiment; altering a transcript; signing another person's name to an attendance sheet; hiding a book knowing that another student needs it to prepare an assignment; collaboration that is contrary to the stated rules of the course, or tampering with a lab experiment or computer program of another student.

If you are accused of misconduct, you may have questions and concerns about the process. If so, you should feel free to call SAJA”

Plagiarism

“Plagiarism means presenting the words or ideas of others without giving credit. You should know the principles of plagiarism and the correct rules for citing sources. In general, if your paper implies that you are the originator of words or ideas, they must in fact be your own.

If you use someone else's exact words, they should be enclosed in quotation marks with the exact source listed. You may put someone else's idea in your own words as long as you indicate whose idea it was (for example, "As Jane Smith points out, . . ."). If you are unsure about the proper ways to give credit to sources, ask your instructor or consult the Writing Center at 6171 Helen C. White Hall (phone: 608/263-1992, e-mail: writing@wisc.edu) for a copy of their handout "Acknowledging, Paraphrasing, and Quoting Sources," ”

Course Calendar

Lec		Date	Lecture topic	Due Dates
1	<u>Week 1</u>	9/4/12	Introduction to Global Change	
2		9/6/12	Introduction to Global Change	Intros on learn@uw
3	<u>Week 2</u>	9/11/12	Population and Development	
4		9/13/12	Population and Development	Short paper 1
5	<u>Week 3</u>	9/18/12	Fossil Fuels and Energy	
6		9/20/12	Fossil Fuels and Energy	Quiz 1
7	<u>Week 4</u>	9/25/12	Earth System Science	
8		9/27/12	Earth System Science	Short paper 2
9	<u>Week 5</u>	10/2/12	Acid Rain and Air Pollution	
10		10/4/12	Acid Rain and Air Pollution	Quiz 2
11	<u>Week 6</u>	10/9/12	Ozone Layer and the Ozone Hole	
12		10/11/12	Ozone Layer and the Ozone Hole	Short paper 3
13	<u>Week 7</u>	10/16/12	Greenhouse Gases	Paper 1 Draft
14		10/18/12	Greenhouse Gases	Quiz 3
15	<u>Week 8</u>	10/23/12	Climate System	
16		10/25/12	Climate System	Short paper 4
17	<u>Week 9</u>	10/30/12	Climate and Population	Paper 1 Final
18		11/1/12	Climatic Change	Quiz 4
19	<u>Week 10</u>	11/6/12	Climatic Change	
20		11/8/12	Climatic Change	Short paper 5
21	<u>Week 11</u>	11/13/12	Ice and Oceans	
22		11/15/12	Drought and Deforestation	Quiz 5
23	<u>Week 12</u>	11/20/12	Food, Fiber, and Forests	Paper 2 Draft
24		11/22/12	NO CLASS (THANKSGIVING)	
25	<u>Week 13</u>	11/27/12	Food, Fiber, and Forests	
26		11/29/12	Alternative Energy and Geoengineering	Short paper 6
27	<u>Week 14</u>	12/4/12	Alternative Energy and Geoengineering	Quiz 6
28		12/6/12	NO CLASS	
29	<u>Week 15</u>	12/11/12	Global and Regional Climate Policy	Paper 2 Final
30		12/13/12	The Future of Global Change	

NO FINAL