

AOS/IES 171

Fall 2016

3 credits

GLOBAL CHANGE: ATMOSPHERIC ISSUES AND PROBLEMS

TTh 1:00-2:15 pm AOSS 811

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

Course Materials

- Required: Dessler, Andrew. Introduction to Modern Climate Change, Cambridge University Press, 978-0521173155 (\$46)
- Optional: 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)
- Lecture slides (posted at web site), Space Sciences library reserve, and course articles

Course Objective and Content

How do we know that humans can alter the composition of the air we breathe and why does this matter? In this course, we will understand how scientists understand elements of global climate and atmospheric change, apply this understanding to observe and predict the effect of these changes on society, and evaluate policy options to limit harmful effects.

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 and policies society might adopt. As a Communications Part B General Ed, this course also focuses on the communication of scientific knowledge about climate and builds skills in multiple forms of oral and written communication of scientific material.

Course Outcomes

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 drought 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?
- How might future 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?

Course Assessment

- 25% Bi-weekly 2 page writing response assignments (5)
- 25% Bi-weekly quizzes (6 – lowest grade 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 week, I will announce the reading or video to watch and the topic of the short paper or quiz, depending on the content we are covering. On Thursdays, we will alternate paper discussion or take the quiz and review answers.

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 how we listen and read critically in this discipline. **Five short writing assignments** will consist of 2-page response papers that are due in class on the dates listed and determined by the material presented that week. No late submissions will be accepted for the short writing responses.

Two 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 peer undergraduate 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 **six typically 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

Lecture		Date	Topic	Due Dates
1	<u>Week 1</u>	9/6/16	Introduction to Global Change	
2		9/8/16	Introduction to Global Change	Introductions online
3	<u>Week 2</u>	9/13/16	Population and Development	
4		9/15/16	Population and Development	Short paper 1
5	<u>Week 3</u>	9/20/16	Fossil Fuels and Energy	
6		9/22/16	Fossil Fuels and Energy	Quiz 1
7	<u>Week 4</u>	9/27/16	Earth System Science	
8		9/29/16	Earth System Science	Short paper 2
9	<u>Week 5</u>	10/4/16	Acid Rain and Air Pollution	
10		10/6/16	Acid Rain and Air Pollution	Quiz 2
11	<u>Week 6</u>	10/11/16	Ozone Layer	
12		10/13/16	Ozone Layer	Short paper 3
13	<u>Week 7</u>	10/18/16	Greenhouse Gases	Paper 1 Draft
14		10/20/16	Greenhouse Gases	Quiz 3
15	<u>Week 8</u>	10/25/16	Climate system	
16		10/27/16	Climate system	Short paper 4
17	<u>Week 9</u>	11/1/16	Climate change	
18		11/3/16	Climate change	Quiz 4 / Paper 1 Final
19	<u>Week 10</u>	11/8/16	Climate change	
20		11/10/16	Climate change	Short paper 5
21	<u>Week 11</u>	11/15/16	Ice and Oceans	
22		11/17/16	Ice and Oceans	Quiz 5
23	<u>Week 12</u>	11/22/16	Food, fiber, and forests	Paper 2 Draft
24		11/24/16	NO CLASS THANKSGIVING	
25	<u>Week 13</u>	11/29/16	Food, fiber, and forests	
26		12/1/16	Alternative Energy	
27	<u>Week 14</u>	12/6/16	Alternative Energy	
28		12/8/16	Global and Regional Climate Policy	Quiz 6
29	<u>Week 15</u>	12/13/16	Global and Regional Climate Policy	
30		12/15/16	The Future of Global Change	Paper 2 Final

NO FINAL