

IDIS 297: Climate Crises: Past, Present and Future Fall Semester 2009



Instructors: Drs. Diane Husic and Hilde Binford
Course Meeting Times: Fridays, 12:45 – 3:45 p.m.

Office Hours:

Dr. Husic's Office Hours:

Tuesdays 10:00 – 11:30 a.m.
Thursdays 10:00 – 11:30 a.m.

Fridays 10:00 – 11:00 pm
By appointment at other times

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Dr. Binford's Office Hours:

Mondays through 8:20 – 8:50 a.m.
Wednesdays .
Tuesdays and 12:45 - 2:15 p.m.
Thursdays
Thursdays & Fridays By appointment

Brethren's House 302
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I. Course Description:

It's hard to deny the symptoms of global warming: the melting of the Arctic and Antarctic, the wide range of species that are already showing signs of adapting to climate change or survival difficulties, and the increase of extreme weather events. Going back in time, there have been a number of climate changes (warming and cooling); this course will look at past climate changes and study their impact on earlier civilizations (our prehistoric ancestors, the Norseman, Mayans, etc.). The retrospective will provide insights into natural causes and cycles associated with climate change and allow a comparative analysis with the impact that the Industrial Revolution and subsequent technological advancements have had on climate trends. Students will be provided with climate data, fossil records and other evidence that forms the scientific basis of global warming, ice ages, and shifts in precipitation patterns. Important for discussion will be the complex variables involved that make it difficult to predict with certainty what impact greenhouse gases have on climate and the precise impact that future climate change will be on different regions of the world. This interdisciplinary course will incorporate field trips, laboratory exercises and potentially guest lecturers to provide insights on the global warming phenomenon in the context of atmospheric chemistry and physics, environmental science, economics, politics, and the arts.

II. Instructional Materials:

Required text: Pearce, Fred (2007) With Speed and Violence. Why Scientists Fear Tipping Points in Climate Change, (Beacon Press, Boston).

Other readings and related videos will be available on reserve in Reeves library. A list of assigned and suggested readings will be provided as we go through the course.

III. Goals of the Course:

Students in the course will:

- gain experience in critically examining scientific evidence and media coverage of a complex scientific issue with vast social implication;
- examine the impact of climate change on past civilizations and determine whether there are lessons to be learned for our future;
- contemplate ethical dilemmas associated with inaction or potential solutions to a global problem and examine how societies respond (or don't) to issues that are framed by uncertainty and controversy;
- have a clearer concept of sustainability; and
- work in an interdisciplinary framework.

IV. Teaching Strategies:

The course will incorporate a variety of teaching and learning experiences including:

- team teaching;
- a series of lectures and class discussions based on the reading assignments, audio-visual materials, and other supplemental materials presented by the instructors;
- small group activities
- opportunities for students to use a range of creative approaches for course projects and their personal action plans;
- laboratory experiences, inquiry-based exercises, student presentations, and field trips; and
- guest speakers

V. Course Requirements:

Attendance is mandatory. For each unexcused absence, your overall grade for the class will be lowered by 0.25 (using a 4.0 scale). Excused absences include illness (doctor's note required) and family funeral (note from home or Student Services required). All other absences will be evaluated at the discretion of the instructor. Chronic lateness will not be tolerated, and will be reflected in the overall grade.

Assignments must be turned in either at the beginning of class in order to receive a letter grade. Assignments not turned in by that time will receive a "zero."

Preparation for and participation in class discussions is a must.

We are planning for this course to be "carbon neutral" and thus, expect students to participate in activities that will reduce the carbon footprint of this course. Details will be provided in the class.

We expect all students to actively participate through the course blog that has been set up for the course (<http://idis297.blogspot.com/>). It is a good idea to be aware of stories in the media that relate to the topics we are covering. The internet can be a valuable resource as well, but you have to critically evaluate the content and source of the information that you find there. Often, timely stories break in the news that warrant out consideration in class, and your familiarity with media coverage of science and environmental issues can (and will) provide the basis for class discussions and for contributing to the blog postings. Active participation in these discussions (in class and online) will be noted and will have a positive effect on your final grade for the course. The blog can be used for your personal reflections on what we are discussing in class, or reactions to things that others post. Please be professional in your postings. At the end of the semester, we will ask you to summarize what you have learned from participating in the blog and what trends or major issues you noticed on the blog throughout the semester.

VI. Academic Honesty:

Students are expected to uphold the standards of academic honesty, as they are spelled out in the Student Handbook.

VII. Exams, Research Paper, Assignment and Debates:

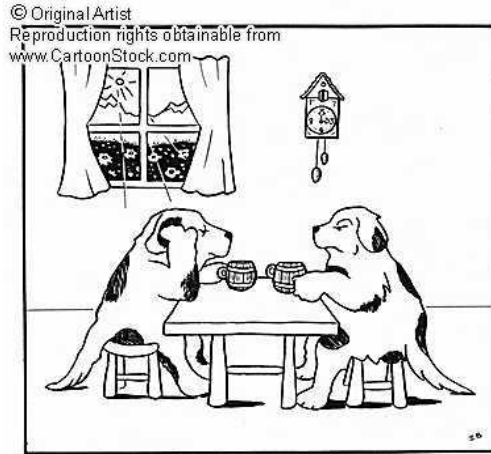
Midterm/Final: The midterm and final exam (**25% each for a total of 50%**) will include short essay responses.

Projects: (30% of the grade) Projects will include such things as a debate on coal plants, GIS modeling for the future, case studies from businesses "going green", and participation in an energy audit and activities aimed at reducing the carbon footprint of the course.

Class Participation, Blog contributions, Participation in Lab Activities and Short Assignments: (20% of the grade) There will be opportunities for discussion on most days. Students are expected to contribute to discussions and to participate fully in class activities. Students are also expected to keep a journal for their class notes, reflections on readings, and reflections on related media items for the duration of the course. The assignments will be important for the course discussions.

VIII. **Special Needs/Accommodations:**

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Learning Services Office as soon as possible to enhance the likelihood that such accommodations are implemented in a timely fashion.



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IX. Topics to be covered and a preliminary schedule for the Class (subject to change; detailed weekly or biweekly class outlines will be posted on BlackBoard)

- Week #1:**
9/4/09 Overview of Course;
- Discussion of possible field trips, special activities, etc.
- Pre-assessment of students current views on climate change and its potential impact on society
- An overview of the semester using The Climate Project/Inconvenient Truth slideshow; discussion
- Introduction to Audubon grant project and assignments for week #2
- Week #2:**
9/11/09 The ozone layer issues vs. the greenhouse effect
Paleoclimatology and past climate crises
Discussion of assigned readings: What can be learned from looking back in history?
- Week #3**
9/18/09 Discussion on readings from With Speed and Violence (assigned chapters) and other readings (e.g. Ruddiman)
Key findings from IPCC reports
Some skepticism
Pascal's Wager applied to climate change
Introduce climate modeling
- Week #4**
9/25/09 The science of global warming
- The potential impact of global warming on biological systems, ecosystems
- Some time in the lab
- Carbon/ecological footprints
- Week #5**
10/2/09 The skeptics responses
An introduction to water issues and potential health issues
- Week #6**
10/9/09 **Midterm exam**
Introduce artistic responses (How the artist's community is responding, semester project)

Topics for after the mid-term:

The Politics of Climate Change
Understanding ACES; the UN Climate Change Conference (Copenhagen)
Copenhagen negotiation exercise
Coal Plant debate
Green buildings and businesses
Water Issues – Availability of fresh water around the globe; Floods, droughts and pending water crises: the U.S. Southwest as a case study;
The impact of climate change on the availability of water;
Carbon-neutral discussion/actions
Overview of potential solutions for decreasing carbon emissions
Climate modeling and Climate Wedge Game
Why bother?
The future

Important Dates:

PennFuture Global Warming Conference: "Taking Action to Build Our Economy and Protect Our Environment"
Monday, October 12, 2009 7:30 - 9:00 p.m.
<http://my.pennfuture.org/site/Calendar/932977564?view=Detail&id=103761>
November 5th (7:30 p.m. – public talk) and 6th (visit to class) – Fred Pearce
November 11th (tentative) – Kathy Mattea – "My Coal Journey"
<http://www.mattea.com/KathyMatteaHome2008.html>

Final

EXAM and final evaluations

Tentatively scheduled for December 18th at 1:30, but may have to be changed.