

Global Environmental Change Geography 450 / Range 450 (3 credits)

Instructors:

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Dr. Lee Vierling
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Textbook: Kump, Kasting, and Crane, 2004: *The Earth System*, Prentice Hall, 2nd edition., 432 p., ISBN-10: 0131420593

Course Goals:

The global human population is growing exponentially. As this occurs, human activities exert greater and greater control over the functioning of the Earth System. Because these changes are occurring across a wide range of scales (from local to global, with both immediate and long-term implications), the severity of environmental change is often unclear and many times controversial to both scientists and non-scientists.

During this course, we will work to understand how several aspects of the Earth System are changing, and to appreciate the interconnected nature of Earth's functioning components. The goals of this course are:

- 1) To gain fundamental understanding of changes in the Earth's global environment over time:
 - a. prior to significant human influence,
 - b. through current responses to human activities,
 - c. under various future projections and scenarios.
- 2) To examine individual components of the Earth System, understand how they contribute to the function of the overall Earth System, and determine interactions among the components.
- 3) To assess current ideas and recent scientific findings in "global environmental change science" by reading and discussing primary scientific literature.

- 4) To appreciate that scientific understanding of many aspects of the Earth System are continually being updated and revised.
- 5) To examine ways that humans can lessen their current impacts on the Earth System.

The textbook will be used as a guide to understand global environmental change. The text will be supplemented with readings from journals, reports, research, and other textbooks. Students will use the readings to formulate detailed questions about environmental issues that they feel are important to more fully understand global change. These questions will then be answered through lecturing and homework assignments.

Homework assignments will include questions from the textbook and lecture notes, as well as problems to solve. The assignments will be geared towards understanding the earth system and global environmental change. You will generate questions from your readings, which will help to stimulate classroom discussions and future homework problems. We expect to assign homework assignments weekly, but only for the first half of the class.

The second half of the class will be devoted to student projects. Students will work in small groups to represent a region or country around the world. The assigned papers and projects are designed to focus the student teams towards understanding the overriding environmental issues in their region/country. The groups will identify serious environmental problems in their areas and devise a plan to deal with them. Your plans will be presented in a poster session near the end of the semester. The final week of class will be devoted to a class debate to identify a list of global environmental priorities to address. An oral final exam will be given during the regular final exam time and will consist of questions from the homework assignments, plus concepts from the papers and projects. More information will be available later in the semester.

Tentative Schedule (may change throughout the semester)

Week 1	Th, 15 Jan:	Introduction to Global Environmental Change Syllabus, Chapter 1	H,V,W
Week 2	Tu, 20 Jan:	Introduction to Global Environmental Change Population, Consumption, and Resource Use	W,V
	Th, 22 Jan:	An Introduction to Systems: Daisyworld Chapter 2	W
Week 3	Tu, 27 Jan:	Global Energy Balance: The Greenhouse Effect Chapter 3	W
	Th, 29 Jan:	Atmosphere-Ocean-Ice Interaction: Thermohaline Chapters 4, 5, and 6	V
Week 4	Tu, 3 Feb:	Atmosphere-Ocean-Ice Interaction Chapters 4, 5, and 6	W
	Th, 5 Feb:	Global Warming Teach-In Presentations may be outside of classtime	H,V,W
Week 5	Tu, 10 Feb:	Climate Change and Global Warming Chapter 16	H
	Th, 12 Feb:	Climate Change Impacts Chapter 16	H
Week 6	Tu, 17 Feb:	Biogeochemical Cycling, Carbon cycle Chapter 8	V
	Th, 19 Feb:	Interconnections of Biogeochemistry, climate, and biodiversity (Reading TBD)	V
Week 7	Tu, 24 Feb:	Biogeochemical Cycling, Nitrogen cycle Chapter 8	H
	Th, 26 Feb:	Focus on the Biota: Metabolism, Ecosystems, and Biodiversity Chapter 9	V
Week 8	Tu, 3 Mar:	Reverberations of Change: Human Threats to Biodiversity Chapter 18	H, V
	Th, 5 Mar:	Reverberations of Change: Human Threats to Biodiversity Chapter 18	H, V
Week 9	Tu, 10 Mar:	Determining Sensitive Areas around the World Guest lecture by Dr. Michael Jennings (Nature Conservancy)	
	Th, 12 Mar:	Determining Sensitive Areas in the U.S. Group assignment	H,V,W

Spring Break (16 – 20 March)

Week 10	Tu, 24 Mar:	Reverberations of Change: Air Pollution: Acid Rain and Tropospheric Ozone Reading TBD	V
	Th, 26 Mar:	Reverberations of Change: Stratospheric Ozone Depletion Chapter 17	W
Week 11	Tu, 31 Mar:	Reverberations of Change: International Agreements on the Environment Clean Air Act and Montreal and Kyoto Protocols	H,V,W
	Th, 2 Apr:	Reverberations of Change: Land Use Change and Ecosystems <i>(Country Paper is due)</i>	H
Week 12	Tu, 7 Apr:	Reverberations of Change: Energy, Biofuels, and GEC (Discussion)	H,V
	Th, 9 Apr:	Ecological Footprint and Sustainability	W
Week 13	Tu, 14 Apr:	Ecological Footprint and Sustainability <i>(Impacts Paper is due)</i>	H,V,W
	Th, 16 Apr:	Global Sustainability, Part I UNEP, Funding sources for global issues <i>(MANDATORY ATTENDANCE)</i>	H,V,W
Week 14	Tu, 21 Apr:	Global Sustainability, Part II <i>(MANDATORY ATTENDANCE)</i>	H,V
	Th, 23 Apr:	Successes and Hopes for Sustainability	H
Week 15	Tu, 28 Apr:	Group Presentations <i>(Group Posters and Proposal Paper are due)</i> <i>(MANDATORY ATTENDANCE)</i>	H,V
	Th, 30 Apr:	Group Presentations <i>(MANDATORY ATTENDANCE)</i>	H,V,W
Week 16	Tu, 5 May:	Group Discussion on Global Change Priorities <i>(MANDATORY ATTENDANCE)</i>	H,V,W
	Th, 7 May:	Group Discussion on Global Change Priorities <i>(MANDATORY ATTENDANCE)</i>	H,V,W
Week 17	W, 13 May (7:30 am – 12:30 pm at your scheduled time)	Oral Final Exam	H,V,W

Assignments and Grading

Course Web Page (Blackboard):

Most of the materials (assignments and lectures) for this class will be disseminated to the students through the course website on Blackboard (<http://www.blackboard.uidaho.edu>). All students that are registered for Global Environmental Change will have access to this website. You will usually be able to download lecture notes and extra readings as PDF files. Please note that if you access materials from a home computer, it is your responsibility to have the proper software installed for reading PDF files (for instance, Internet Explorer and Adobe Acrobat Reader).

Please pay close attention to the Blackboard Calendar and Gradebook. The Calendar will be used to assign readings and assignments, and distribute lecture notes. The Gradebook will track your grades throughout the semester.

<i>Homework assignments</i>	35%
Weekly assignments before Spring Break	
<i>Position Papers</i>	
Country/region description	8% + 2% (group)
Global Change Impacts	8% + 2% (group)
Sustainability Proposal	8% + 2% (group)
<i>Presentation and Participation</i>	
Individual	10%
Group	5%
<i>Oral Final Exam</i>	20%
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TOTAL	100%

Grading Scheme:

A = 90% and above,

B = 80-89%

C = 70-79%

D = 60-69%

F = Below 60%

Policies

Cheating will not be tolerated!! Although I encourage students to work together on assignments, your work must be your own. ***Do not plagiarize or copy the work of others.*** If you are caught cheating, you will receive absolutely no credit for that work, possibly a failing grade for the course, and you will be formally reported to the Dean of Students for appropriate disciplinary action. The University of Idaho's policy on cheating is described in Article II-- Academic Honesty of the <http://www.webs.uidaho.edu/fsh/2300.html> .

Attendance in the lectures is essential to this course. You must come prepared to this class, because there will be class discussions during every lecture period. ***Do the reading before the class for which it is assigned!!*** If you absolutely must miss a lecture, please notify Dr. Walden at least one day prior to the class (phone 885-5058; please leave a message if I'm not in, or e-mail me at vonw@uidaho.edu). You are responsible for knowing the due dates for all assignments, papers, and presentations.

Assignments are due by the beginning of class on the assigned due date. Late assignments will **not** be accepted. If you are unable to attend class, the assignment can be e-mailed to me as an attachment, but the time that the email was sent must be before class begins on the assigned due date. No exceptions.

Rules of engagement for Class Discussions:

There will be frequent class discussions throughout this course. Please follow these "rules of engagement" when discussing any topics.

- 1) Be respectful and courteous to the professors and your fellow students, even if you disagree with their opinions.
- 2) No swearing or foul language.
- 3) No demeaning comments towards anyone's character, opinion, race, etc...

Disability Support Services Reasonable Accommodations Statement:

Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodation(s) needed for the course. Late notification may mean that requested accommodations might not be available. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 333.

- 885-7200
- email at <dss@uidaho.edu>
- website at <www.access.uidaho.edu> or <www.webs.uidaho.edu/aap>