GLOBAL ENVIRONMENTAL CHANGE
GEOG 4396
FALL 2014 SYLLABUS
GR 3.606; Tuesdays 8:30 – 9:45

Instructor:	**Dr. Anthony Cummings**
Office:	GR 3.221
Office Hours:	Tuesdays, 11:00 a.m. – 1:00 p.m. or by appointment
Telephone:	972-883-4882
Email:	anthony.cummings@utdallas.edu

Course Overview
Change is a characteristic feature of the earth. Change occurs across various time and spatial scales, is triggered by both natural and anthropogenic stimuli, and impacts the ability of the earth to support human populations. While issues of environmental concerns have persisted for many years, arriving at ways of resolving these remain elusive despite research, media attention, increased public awareness, campaigns by environmental pressure groups, and international agreements. This introductory course to *global environmental change* (GEC) will focus on understanding the physical processes and patterns of terrestrial, atmospheric, and climatic changes, as well as discuss the social causes and implications of these changes. The course's main objectives will be to develop an understanding of: i) basic earth system processes and the mechanisms that lead to environmental change, and, ii) the human impact on earth systems, its effects on the global environment, and the ways in which these changes in turn affect humans.

We will look at the ways in which human activities affect the land, water and atmosphere, including topics such as land-use and land-cover changes (e.g., deforestation), land degradation (e.g., soil erosion), water pollution, acid rain, photochemical smog, stratospheric ozone, the greenhouse effect, and climate change.

Topics to be covered:
1. Introduction to global environmental change
2. Biogeochemical cycles
3. World population, development, and resource consumption
4. The changing Earth surface: land and water
5. The changing atmosphere: acid deposition, photochemical smog, stratospheric ozone
6. The changing atmosphere: carbon cycle and global climate

Textbook and assigned readings
The required text for this course is David Archer's "**Global Warming: Understanding the Forecast**" Blackwell Publishing 2011. We will use this text extensively during the second part of the course. The text is available through Amazon.com. For the first part of the course readings from a variety of sources will be assigned and you will be directed to these via eLearning. Assigned readings correspond to the lectures and discussions listed in the course organizer on page 4. Please be sure to look for the readings for a specific date and download them ALL. Submitting questions on the readings for discussion is a course requirement and the method for question submission will be discussed in class.

Assignments and evaluation
Readings are assigned for each class and are aimed at helping students to better understand the materials being covered in lectures. Students **MUST** complete the required readings and come to class prepared to share their analysis of the issues being covered. In addition to learning to critically think about and discuss content, an important aspect of the course will be developing skills and gaining practice in writing and literature research. There are three main assignments for this course in addition to six (6) in-class quizzes, and two (2) exams. Each student will also be assigned days on which they will report on a current environmental

issue – these will be discussed on the first day of class. An overview of each assignment is given below, with more details provided as the course develops and the due date of the exercises approach.

Daily report (s): Each student will choose three dates throughout the semester when they will bring a 5-7 minute report on an issue in the news or that has caught their attention through some other means that is relevant to GEC. Their report may include handouts, pictures, or a PowerPoint presentation. You have complete freedom to make it fun or dramatic, but reports are judged on quality of presentation and relevance to the class.

Assignment 1: Each student will identify a scientist instrumental in shaping our understanding of a global environmental issue and prepare a presentation telling us how the scientist helped us to better understand that issue. Your presentation will include an overview of how the scientists' contributions are currently shaping our response to global environmental change.

Assignment 2: Each student will identify an issue relevant to GEC, perhaps something that has been on their mind for a long time, will research this issue and prepare a 7-8 page paper and 5-7 minute PowerPoint presentation. They will show how this issue affects one or more of the earth's biogeochemical cycles.

Assignment 3: This group project is worth 15% of the overall course grade. Your group will be assigned one of the parties to the United Nations Climate Change Convention (UNFCCC) and will research the party's historical position at the UNFCCC. Your findings will be presented at a debate to be held during a class session (see Organizer for date). Your group will be required to act as the party you are representing and provide an accurate account as possible of their historical position at the UNFCCC.

Your grades for this class will come from the following:

- Daily reports, attendance, and participation: 20%
- Six in-class quizzes (may be unannounced) : 10%
- Two tests: 40%
- Three assignments: 30%

Letter grades will be determined as follows:
A+ > 95; A = 93-95; A- = 90-92; B+ = 87-89; B = 83-86; B- = 80-82; C+ = 77-79; C = 73-76; C- = 70-72; D+ = 67-69; D = 63-66; D- = 60-62; F = <59

Academic Honesty & Conduct
Please refer to the Academic Integrity Policy for the University of Texas at Dallas: http://www.utdallas.edu/deanofstudents/dishonesty/. All suspected cases of academic dishonesty (cheating, plagiarism, collusions, etc.) will be immediately forwarded to the Office of Judicial Affairs. To avoid being suspected of dishonesty, in instances where you may have spent a lot of time studying with someone else, and I encourage you to work together, please ensure your submitted work reflects your unique thoughts and ideas. Sit away from persons with whom you may have studied during exams, this will avoid suspicion of 'cross duplication' on scripts. Show respect to others by arriving on time for classes and staying the full length of the lecture or discussion. Late arrivals disturb everyone already in class. Allow others to speak, even when you may disagree with them. Do not have personal conversations during class (this also means turning off your cell phones and laptops while in class). Food and beverages may be brought into class but you are responsible for cleaning up after you.

Disability
If you need accommodations for a disability, I would be more than happy to make these for you. Please contact the Office of Student Affairs (http://www.utdallas.edu/studentaffairs/) to complete the relevant paperwork to share with me.

Religious Observances

I would like to accommodate any scheduling needs related to conflicts between this course and students' religious beliefs. If you are unable to attend lecture or exam because it falls on a religious holiday, please notify me (via a written note or email) at least by the end of the first week of class so that you will be accommodated.

GEOG 4396 GLOBAL ENVIRONMENTAL CHANGE
FALL 2014 COURSE ORGANIZER

Date	Tuesday	Thursday	Reading (s)/Milestone
26 Aug	**Introduction to class**	**Introduction to Global Environmental Change I (v)**	**Introductions** **Thomas et al.**
2 Sept	**Introduction to Global Environmental Change II**	**Introduction to Global Environmental Change III**	**Mckenzie (Introduction), Harris (GEI), Turner et al., Turner**
9 Sept	**Sustainability, Sustainability Science and Ecosystem Services Provision**	**Biogeochemical cycles and Human Well-being** **Library databases**	**Wu** **Mackenzie (Our Changing Planet Cap. 7)**
16 Sept	**World Population, development, resource use I**	**World Population, development, resource use II (v)**	**IHDP Update**
23 Sept	**World Population III** **Changing earth surface: land use/land cover change**	*Assignment 1 presentations*	**Lambin** ***Assignment 1 due***
30 Sept	**Changing earth surface: forests I**	**Changing earth surface: forests II**	**State of the World's Forests 2009; 2011; Economist**
7 Oct	**Changing earth surface: soils and land degradation**	**Changing earth surface: water**	**Lal et al.** **Mallin**
14 Oct	**Changing atmosphere: acid deposition I**	**The Changing Atmosphere: acid deposition II; photochemical smog I**	**HBRF – Acid Rain**
21 Oct	**The Changing Atmosphere: tropospheric ozone II; stratospheric ozone I**	**The Changing Atmosphere: stratospheric ozone II**	**Beevers;** **Weatherhead and Andersen**
28 Oct	**The Changing Atmosphere: stratospheric ozone III; Climate I – proxy records**	**Exam 1**	**Archer 1-4**
4 Nov	**The Changing Atmosphere: Climate II – basics of climate change (v)**	**The Changing Atmosphere: Climate III - radiation balance and the greenhouse effect** *Assignment 2 presentations*	**Archer 1-4** ***Assignment 2 due***
11 Nov	**The Changing Atmosphere: Climate IV - Factors influencing climate**	**The Changing Atmosphere: Climate V – greenhouse gases**	**Archer 5-8; 8,10**
18 Nov	**The Changing Atmosphere: Climate VI – fossil fuels and energy (Heat)**	**The Debate: Class presentations**	**Archer 9 and 12** ***Assignment 3 due***
25 Nov	***No Class – Thanksgiving***	***No Class – Thanksgiving***	***No class – Thanksgiving***
2 Dec	**The Changing Atmosphere: Climate change VII - the forecast**	**Wrap up and course evaluations**	**Archer 13**
9 Dec	**Exam 2**		

Note: the Organizer is a dynamic document that changes as the semester proceeds. Students are responsible for checking Blackboard for the latest course information. Additional readings/assignments will be assigned periodically (announced in class and posted on Blackboard).