New Course in 2008 Fall: **ENGR G4510 Climate Change and Natural Hazards**

Instructor:
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Office Hour: M 1:30 - 2:55PM; Office: National Weather Center 3652; **TA:** Sadiq Khan
Lecture Time: Monday 3:00-5:30pm (10 minutes break)
Lecture Location: National Weather Center 4140—CAPS Conference Room

Course Description: An introductory course for U/G students who wish to have a correct understanding of the Earth's climate history and climate variability, want to know more about Greenhouse Gases, Global Warming, ENSO and other climate extremes. This course will further focus on how abrupt climate changes impact natural hazards. Though draughts, hurricane, floods, landslides, earthquakes and volcanic eruptions are normal processes of the Earth's dynamics, these natural events become disasters when Nature and Society intersect. The course will also examine the causes, effects, and options available to mitigate various types of natural disasters.

Course Objectives: The aim of this course is to provide students with insights and skills they need during their future professional careers to respond to, and deal with issues related to climate variability, natural and environmental disasters. While the course is highly condensed, students upon completion of the course should:

.Understand the Earth's climate past, present, and possible future
.Understand climate extremes and common types of natural hazards
.Understand that certain aspects of climate variability and natural hazards can generally be quantified in advance, accepting some uncertainty; and
.Know how to deepen on their own understanding of the complex interaction between nature and societies during disasters, and be able to apply the notion that as individuals and professionals we can make a difference, albeit mostly in incremental steps

Textbooks (available at OU library or Bookstore):
Earth's Climate: Past and Future (2nd Ed) W.F. Ruddiman, W.H. Freeman and Company, 2008
ISBN-13: 978-0-7167-8490-6 ISBN-10: 0-7167-8490-4
Natural Disasters, (6th Ed), Patrick L. Abbott, ISBN-13 9780073292328

Grading: Class Participation (10%); homework (20%); Midterm Exam (25%); Final (25%); Term Paper/Presentation (20%); **Grades**: >90=A; 80-89=B; 70-79=C; 60-69=D; <60=F; The instructor may apply a curve to arrive at the final grade.
Homework: Topical assignments will be given out to the class approximately bi-weekly and due the following week. Late assignments are not acceptable!!!
Exams: One midterm and a final presentation are required. The exams will be a mix of theoretical concepts from the homework as well qualitative understanding of the topics discussed in lecture.
Climate and Natural Hazard Journal (CNHJ): Throughout the term students are required to keep a CNHJ of four large-scale hazard events and one climate hot topic, which have made the media headlines. For natural hazards, each entry must contain the following parts: Date of the event; Sources for information concerning the event - the sources could be from the newspaper, magazines or the web; Brief summary of the event, including a description of the affects the

event had on humans; A short discussion, displaying critical thinking, of the importance, implications or consequences of this event and what could have been done to mitigate the damages. Journals MUST be typed and later presented in class. Journals are due no later than the last week of class.

Academic Misconduct: Academic misconduct will not be tolerated and could lead to your dismissal. You must do your own work. Please visit the following link for information on your rights to appeal and responsibilities should there be evidence of academic misconduct. See the following links concerning academic integrity and rights: http://www.ou.edu/provost/integrity-rights/; http://www.ou.edu/studentcode/

Reasonable Accommodation: The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

Syllabus of ENGR G4510 Climate Change and Natural Hazards (*subject to change*)

Week#	Subject	Reading	Problem Set
W01. 08/25	Introduction (+ Gore' Movie)	EC Chapter 1	
W02. 09/01	Labor Day	No Class	
W03. 09/08	Overview of Climate Sciences, Data, and Model	EC Chapter 1 and 2	
W04. 09/15	Greenhouse/Icehouse Climate	EC chapter 3-6	Hw 1 due
W05. 09/22	Human and Preindustrial Climate	EC Chapter 15-16	
W06. 09/29	Current and Future Climate (Global Warming-Sciences)	EC Chapter 17-18	
W07. 10/06	IPCC and Future Climate Change Scenario	EC Chapter 19 and IPCC materials	Hw 2 due
W08. 10/13	(Global Warming-Sciences and Solutions + DVD)		
W09. 10/20	Climate Change Review		Hw 3 due
W10. 10/27	Mid-term Exam Natural Hazards/ Disasters and Earth Energy Flow	ND Chapter 1-2	
W11. 11/03	Earthquake/Tsunami/Volcanic	ND Chapter 3-9	
W12. 11/10	Climate/Weather hazards/Tornados	ND Chapter 11-12	Hw 4 due
W13. 11/17	Reading: Mass movement/Slides/	ND Chapter 10	
W14. 11/24	Hurricane/Floods/Fires/Droughts	ND Chapter 13-15	
W15. 12/01	Great Dying/Space Hazards	ND Chapter 16-17	Hw 5 due
W16. 12/08	Student presentation		
W17. 12/15	Final Exam/or Term Paper		
W18. 12/22	Grades		

Note: EC-Earth Climate Textbook; and ND-Natural Disaster Textbook

Web-links and Online Resources

Textbook web**:** **http://bcs.whfreeman.com/ruddiman2e/default.asp**
http://wcrp.wmo.int/
(World Climate Research Program)
www.ncdc.noaa.gov/oa/climate/globalwarming.html
(National Climatic Data Center)
www.ipcc.ch
(Intergovernmental Panel on Climate Change)
http://www.ngdc.noaa.gov/paleo/softlib.html
Maintained by the World Data Center for Paleoclimatology in Boulder, Colorado. Contains climate data of all kinds, as well as the locations of all sites that contain each type of data.
http://www.classzone.com/books/earth_science/terc/navigation/home.cfm; great animations and visualization
www.igbp.net
(International Geosphere-Biosphere Program)
www.pages-igbp.org/
(Past Global Changes Project)
http://www.ncdc.noaa.gov/paleo/globalwarming/paleolast.html

Links to Natural Disaster Information on the Internet

Note: This list is not exhaustive, but it contains some important links that will also contain other links to natural disaster information.

Natural Hazard Links
Tsunami Links
Nasa Natural Hazard Links
Flood Hazard Links
Natural Disasters in Developing Countries Links
Natural Disaster Links
Earthquake Disaster Links
Volcano Hazard Links
Volcano Links

Plate Tectonics
USGS: This Dynamic Earth
Natural Disasters in General
CBS News Disaster Links
Yahoo Disasters Page
Federal Emergency Management Agency
The Dangerous Earth Web page
HazardNet
Disaster Relief
Natural Hazards Center at the University of Colorado
USGS Hazards Page
Earthquakes
USGS Earthquake Information
New Madrid Seismic Zone Information Pages
Univ. Nevada Reno- About Earthquakes Page
John A. Martin & Assoc. Earthquake Preparedness Page
Volcanic Eruptions

MTU Volcanoes Page
The Electronic Volcano
Volcano World
Cascades Volcano Observatory
Tsunami
Univ. Washington Tsunami Information
Landslides
USGS National Landslide Information Center
Mass Earth Movements
Floods
PBS - NOVA Flood Page
Dartmouth Flood Observatory
Floodwatch
Floodplain Management Web Site
Weather Related Disasters
National Hurricane Center
Times Picayune Series on Hurricanes - "Washing Away"
USA Today Tornado Page
Meteorite Impacts
Asteroid and Comet Impact Hazards
The Chesapeake Bay Bolide
Terrestrial Impact Structures

General Web Resources:
Nice Page of Geology Links
Illinois State Geological Survey's Page of Links
Geology Daily News and Links
Yahoo's Geology and Geophysics Page of Links
The Franklin Institutes Earth Science Links Page
A List of Places Every Geologist Should GO!!
Asserted Earth Science Web
General Geology Links
Pennsylvania State Geologic Survey
Structural Geology and Tectonics Jobs
U.S. Geological Survey
Geological Society of America
American Geophysical Union
NASA's Earth Science Page