Environmental Geology: GEOS-3310

Fall, 2011

1 Course Description

A practical course examining the interactions of people and our physical environment. Natural hazards, including landslides, flooding, tsunamis, volcanoes, earthquakes, erosion and sea-level change. Air, soil, fresh and ocean water pollution problems and solutions including greenhouse gases, ozone depletion, acid rain, aquifer depletion, toxic wastes and contamination. Energy supplies and the environment, including radioactive waste problems. Global climate change and man's impacts on climate. Designed to fulfill the general education science requirement.

1.1 Prerequisites

This course has no prerequisites, students are assumed to have fulfilled the math and science requirements for admission to UTD.

1.2 Meeting Times & Places

Day	Time	Call Number	Professor	Phone	E-mail
MWF	MWF 10-11am	83376	Dr. Tom Brikowski	x6242	brikowi@utdallas.edu

Class meets in ECSS 2.311 (see campus map). Professor's office hours are 11:00am-12:00pm MW in ROC 2.301D

1.3 Textbook and Other References

Required Text Keller, E. A., Introduction to Environmental Geology, p. 792, Prentice Hall, Upper Saddle River, NJ, 2011. 5th Ed., ISBN 9780321727510, [1]

Optional the publisher maintains a companion website (student resources)[2] for the textbook that contains lots of supplemental information, sample quizzes, etc.

1.4 Google Earth

An important goal of this class is to give the student a visceral feel for the nature of each topic studied. The easy browsing of the Earth's surface in Google Earth[3] allows you to do this in the comfort of your own home without field trip fees! Students are encouraged to download and use this free software. Links to Google-Earth-based lecture materials are available in eLearning, and intermittently on this website.

2 Course Organization

Course grade will be based on 4 during-semester tests, with an optional final exam. Generally a test review will be given during the lecture prior to each testing date (see last column in Table 1). Most tested material will be from the textbook, but up to 25% will come from lecture. So, while lecture attendance isn't required, it is highly recommended.

2.1 Test Preparation:

Study the assignments in the syllabus (Table 1) thoroughly. The "Learning Objectives" will help you understand the goal of each textbook chapter. You are responsible for **all** material in the textbook. *Pay particular attention to boxed text, graphs and diagrams as these help to explain the text material.*

[1] http://www.pearsonhighered.com/educator/product/Introduction-to-Environmental-Geology-5E/9780321727510.page

[2] `http://www.pearsonhighered.com/educator/product/Introduction-to-Environmental-Geology-5E/9780321727510.page`

[3] `http://earth.google.com/`

Table 1: Lecture and testing schedule. The course content is divided into 4 parts, or "units". One exam is given over each unit, exam dates highlighted by "⇒" in first column.

Unit	Text Chapter	Topic	Test Date
1	1	Philosophy & Fundamental Concepts	
	2	Plate Tectonics	
	3	Minerals & Rocks	
	4	Ecology & Geology	
⇒	5	Intro. to Natural Hazards	Fri. Sept. 23rd
2	6	Earthquakes	
	7	Volcanoes	
	8	Rivers & Flooding	
	9	Slope Processes, Landslides, Subsidence	
⇒	10	Coastal Hazards	Fri. Oct. 14th
3	11	Extraterrestrial Objects	
	12	Water Use, Supply	
	13	Water Pollution	
	14	Mineral Resources	
⇒	15	Energy & the Environment	Fri. Nov. 11th
4	16	Soils & Environment	
	17	Waste Management	
	18	Air Pollution	
	19	Climate Change	
⇒	20	Geology, Society & the Future	Mon. Dec. 5th
"5"	All	Comprehensive, Optional Final Exam	8:00a.m. Friday, Dec. 9

Terms in boldface type in the textbook will often appear in test questions. You should thoroughly understand the concepts presented in the "Summary" the end of each chapter. Online versions of the lecture notes, with supplementary materials are expected to be available through eLearning and the class website[4]. The practice exams offered through the publisher's textbook companion website[5] are useful study guides, although not guaranteed to be accurate! Approximately 80% of the test questions will be taken from the textbook. Additional questions will generally be based on local or current examples allowing practical application of the concepts given in the textbook. Test review sessions will be offered approximately every other Friday (see Table 1), at which time the instructors will be available to clarify any questions raised by the class.

Test Procedure: Unit tests will be given on the designated days (usually Fridays) in ECSS 2.311. If you are unable to attend these sessions you must notify us *in advance*, and a single makeup session will be scheduled outside of class time (generally the following Tuesday). Please bring a photo ID. We will check these and take attendance when distributing tests. Tests are not returned to you, nor are they available for later review. They are kept, however, as a check on our record-keeping and, should there be a discrepancy between our record and yours, we can pull your old tests to correct the record.

Final Exam: An optional comprehensive final exam may be taken during the regularly scheduled final exam period (scheduled for 8:00a.m. Friday, Dec. 9). This exam is strictly for extra credit

Grade Determination: Each of the unit exams will comprise 25% of your grade, with the optional final counted as a 10% extra credit.

2.2 Rules and Regulations

- **All official communication with you will be posted on this Website in the "Late Breaking News" section (sec. 4); you are responsible for all posted information.** Additional information

[4] `http://www.utdallas.edu/~brikowi/Teaching/Environ_Geology`
[5] `http://wps.prenhall.com/esm_keller_envgeology_8`

(help aids) about some of the course material is posted on the website as well.

- Cell phones and other communication devices are prohibited in the testing room. Please turn these off prior to starting your test. Cell phones used during any test are subject to confiscation by the testing room monitor.

- All electronic communication (e-mail) with the professor or teaching assistants **MUST** be done from a UTD account. In general this will be most easily done via eLearning. E-mail may not be received by instructors if sent from a non-UTD account, and instructors are prohibited from sending personal or grading information to non-UTD addresses.

- The last day for dropping this course without WP/WF is Sept. 27th; students dropping from Sept. 27th to Nov. 1st will receive a grade of WP or WF. After Nov. 1st you may only drop for non-academic reasons (see UTD Drop/Add Policy[6]).

- **Incompletes are not given** in this class unless a valid, documented major medical or similar excuse is provided. Procrastination does not constitute an acceptable excuse.

3 Online Resources

3.1 Lecture Notes

PDF files of lecture notes are available below. Generally these can only be accessed from UTD IP addresses. Off campus access is available through eLearning.

[6] http://www.utdallas.edu/student/registrar/lookup/dropadd.html

Chapter	Topic
1	Introduction to Environmental Geology
2	Earth Structure/Plate Tectonics
3	Minerals & Rocks
4	Ecology & Geology
5	Intro. to Natural Hazards
6	Earthquakes
7	Volcanoes
8	Rivers and Flooding
9	Landslides
10	Coastal Hazards
11	Extraterrestrial Objects
12	Water Resources
13	Water Pollution and Treatment
14	Mineral Resources
15	Energy
16	Soils & Environment
17	Waste Management
18	Air Pollution
19	Global Climate Change
–	Hazard Map Review

4 Late-Breaking News

Any information that changes during the semester will be discussed in this section.

First Meeting Our first meeting will be in ECSS 2.311 (see campus map), and will consist of an introduction to the class. Course grade will be based on 4 during-semester tests, with an optional final exam.

Library Copy of Textbook A copy of the textbook has been placed on 2-hr reserve at the Library.

Makeup Exams The makeup exams will be held in FA 2.106 at noon, the first Tue. after the regular exam. Please notify the TA (Zabi Khaxar, zabi.khaxar@student.utdallas.edu) if you'll be attending the makeup.

5 Outside Resources

Here is a short list of general Internet websites pertaining to Environmental Geology:

NASA Natural Hazards Monitoring site[7] Satellite images of global natural hazard events, e.g. forest fires, dust storms, volcanic eruptions

World Watch Institute annual report on the state of the global environment[8]

Tropical Weather[9] Status of named tropical cyclones, including satellite imagery and predicted paths

Geology From Space[10] Summary of NASA photos showing various Earth geologic features observable from space.

Airphoto of Your House[11] U.S. Geological Survey National Atlas. Plot topography, population, infrastructure, etc. and view airphotos for anywhere in the U.S.

World Volcanic Activity[12] Smithsonian link to worldwide activity reports and volcano summaries.

Current Volcanic Activity[13] U. Alaska site, sometimes poorly maintained, much better graphics.

Automobile Fuel Economy[14] Great U.S. Gov't. site that lets you research and compare vehicles by their fuel efficiency and emissions ratings

U.S. Air Pollution Trends[15] Report detailing recent trends in U.S. air pollution, causes and effects, and projections for the near-future

U.S. Energy Information Agency Annual Energy Outlook[16] Report detailing most recent US projections of energy supply and demand for the next 50 years. Updated biennially, see archive[17] for older reports.

U.S. National Atlas[18] Customizable topographic maps and airphotos for most locations in the U.S.

[8] http://www.worldwatch.org

[17] `http://www.eia.doe.gov/oiaf/archive`

References

Keller, E. A., 2008, Introduction to Environmental Geology. Prentice Hall, fourth edn., ISBN 9780132251501.