ERS315H5 Environmental Geology (SCI)

This course will focus on Earth processes as they relate to human activities. Topics include global climate change; groundwater flow and contamination/human engineering of Earth processes; geological aspects of pollution and waste disposal; and environmental impact of extracting/using minerals, energy, soil, and other Earth resources. Field trips will give us first-hand experience in aspects of human/planet interaction. [39L]

Prerequisite: ERS202H5/203H5

Instructor:
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Earth Sciences, Dept. of Chemical and Physical Sciences
Office hours: Tuesday 12-1 p.m./Wednesday 11-12 or by appointment

Class Schedule:
Lectures: 11 a.m.-12 noon Tuesday, 9-11 a.m. Wednesday, Room 2062 South Building

Marking Scheme:
Mid term test 30% (Feb. 6th)
Final 40%  TBA
Term paper 15% (April 7th via e-mail)
Presentation of term paper 5% (April 8th + 9th, presentations in alphabetical order)
Exercises 10% (due at end of class)

Late penalty on term paper: 20% of full mark per day

Literature:
No textbook is required for this class even though it is highly recommended to consult the below book, which is on reserve at the library. A handout will be given for each lecture, containing an outline of topics discussed as well as the most relevant figures. It is your responsibility to follow the lectures and fill in relevant information on the handouts provided.

Introduction to Environmental Geology, 4th edition
Edward A. Keller
Publisher: Prentice Hall
Copyright: 2008
752 pp
**Term paper:**
The rationale for doing a paper is to demonstrate an increased amount of knowledge in your chosen subject. The paper should demonstrate a knowledge of scientific and/or environmental principles that pertain to your subject.

- Length 10 pages (12 point, 1.5 spaced) plus or minus 1 page, departure from this length restriction will result in 10% penalty for each page

- Maximum of 6 figures, abstract (300 words, list of references cited)

- Paper will include an introduction (including statement of problem), main body (with subheadings, figures and tables if necessary), discussion, and summary and/or conclusions.

- Papers will be presented during last week of classes as 5 minute presentations (plus 2 minutes for questions).

**Term paper topics:**
Paper can be on any subject dealing with geology and the environment.

Before the midterm each student has to email me two acceptable topics for a term paper on Environmental Geology. I will choose one of them. If neither of the topics suggested appear to be appropriate, I will issue a topic (examples of topics are: Yucca Mountain Nuclear Waste Disposal Site, Flooding during Hurricane Katrina, Current Status of Deep-Sea Mining). The earlier you decide on a topic the higher the chances are that it has not yet been taken somebody else. In addition, you can get a head start and don’t have to work on the paper when you get busy with other assignments towards the end of the semester.

All statements presented in this report that are not derived from your own research are to be properly referenced; this includes citations within the text itself. This paper is to be a synthesis IN YOUR OWN WORDS of your subject material; where direct quotes are made source must be properly referenced. You are encouraged to utilize a diverse series of source materials, including maps, state and federal reports, journals and books.

A "References Cited" section that lists those materials that you actually used and cited is to be given at the end. Citation procedures and the "references cited" section are to follow exactly the format used by the Geological Society of America (bottom of page http://www.geosociety.org/pubs/geoguid5.htm)

Do not attempt to download ‘ready-to-go’ term papers from the internet- I also know how to use the internet!
Course outline

1. Topic  Introduction to Environmental Geology
2. Topic  Natural Hazards Overview
3. Topic  Earthquakes and Related Phenomena
   Exercise- Earthquake Damage Assessment
4. Topic  Volcanic Hazards
5. Topic  Rivers and Flooding
   Walking field trip to Credit River Valley

MIDTERM TEST

6. Topic  Landslides, and slope failures
   Exercise- Landslide Hazard Assessment
7. Topic  Coastal Processes
   Exercise- Storm surge/Tsunami Assessment
8. Topic  Water resources
9. Topic  Water pollution
   Exercise- Groundwater flow and contamination
10. Topic  Mineral resources
11. Topic  Deep-sea mining
12. Topic  Energy resources
13. Topic  Soils and environment
14. Topic  Waste Management-
   Field trip to Region of Peel Integrated Waste Management Facility
   Exercise- Landfill siting
15. Topic  Air Pollution
16. Topic  Geology, Society and the Future
17. Topic  Global Change

FINAL EXAM