

## **ERS315H5 Environmental Geology (SCI)**

This course will focus on Earth processes as they relate to human activities. Topics include sustainability, 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. A field trip will give us first-hand experience in aspects of human/planet interaction. [36L]

*Prerequisites:* Two of ERS201H5/202H5/203H5

### **Instructor:**

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Earth Sciences, Dept. of Chemical and Physical Sciences

Office hours: Tuesday 11a.m. - noon/Wednesday 11a.m. - noon or by appointment

### **Class Schedule:**

Lectures: 10-11 a.m. Tuesday, Room DV3093, 9-11 a.m. Wednesday, Room DV1157A

### **Marking Scheme:**

Term test 1	25%	(Jan. 31 <sup>st</sup> )
Term test 2	25%	(Mar. 7 <sup>th</sup> )
Term test 3	25%	(Mar. 28 <sup>th</sup> )
Term paper	15%	(March 14 <sup>th</sup> in class)
5 Exercises	10%	(due in class)

Late penalty on term paper: 20% of full mark/day after 14/03

There will be no prior announcement as to when in-class exercises will be conducted. It is your responsibility to attend class regularly.

### **Missed Term Tests or Exercises:**

There will be no make up tests or exercises. A missed test or exercise will only be excused for cases in which the absence was entirely beyond your control (e.g. medical reasons, personal affliction), but only if proper documentation is submitted. In this case remaining tests and exercises will be reweighted accordingly (e.g. if one test has been missed, the two remaining tests together will count for 75% of grade).

There will be no prior announcement as to when exercises will be conducted. It is your responsibility to attend class regularly.

Medical Excuses: Within ONE WEEK of missed test/quiz/lab you must submit the following to me: (1) A University of Toronto Student Medical Certificate, filled out by your doctor, and (2) a detailed letter from you requesting consideration including your name, student number, email address, date of missed test, and how it prevented you from completing your work.

Non-medical excuses: BEFORE YOUR ABSENCE, submit a letter requesting consideration including the following information: name, student number, email address,

date of expected absence and a detailed description of the reason for the absence. If your absence arises in an emergency, this letter may be submitted up to ONE WEEK after the absence. Valid excuses include: emergency care of a child, parent or other family member and funerals. Reasons involving personal commitments such as vacation travel, work and routine medical appointments will not be considered.

**Term paper:**

The rationale for doing a paper is to demonstrate an increased amount of knowledge in a given subject. The paper should demonstrate a knowledge of scientific and/or environmental principles that pertain to your subject.

-Length 5 pages (12 point, 1.5 spaced, 1" margins) plus or minus 1 page, departure from this length restriction will result in 10% penalty for each page (this includes abstract, figures and references, but does not include cover page)

-Maximum of 3 figures as part of the text (no individual figure may be larger than one third of a page).

- Paper will include an abstract (300 words plus/minus 10%), introduction (including statement of problem), main body (with subheadings, figures and tables if necessary), discussion, and summary and/or conclusions and list of references cited.

Term paper topics:

Paper can be on any subject dealing with geology and the environment.

By **February 8<sup>th</sup>** each student will be emailed a topic for a term paper.

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. All information from other authors 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/documents/gsa/pubs/GSA\\_RefGuide\\_Examples.pdf](http://www.geosociety.org/documents/gsa/pubs/GSA_RefGuide_Examples.pdf) ). Citations have to appear in text and match bibliography at end of paper. Most of your statements are not based on your own work but the work of others – this must be cited at the end of every sentence or sequence of sentences. Citations from places like Discovery Channel, BBC news or information from websites is not allowed (e.g. no reference to <http://www.....>). All Figures must be numbered, referenced. Do not use statements such as “Researchers have found...”, but rather say: NameofResearcher (Year) has found....

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**      **Coastal Processes**  
*Exercise- Storm surge/Tsunami Assessment*
- 3. Topic**      **Water resources**
- 4. Topic**      **Water pollution**  
*Exercise- Groundwater flow and contamination*
- 5. Topic**      **Rivers and Flooding**  
*Walking field trip to Credit River Valley*  
*Exercise- Flooding*
- 6. Topic**      **Waste Management**  
*Exercise- Landfill siting*
- 7. Topic**      **Energy resources**  
*Exercise – Coal Property Evaluation 1*
- 8. Topic**      **Mineral resources**
- 9. Topic**      **Deep-sea mining**
- 10. Topic**     **Mitigation of Global Warming**

### **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. Lecture note outlines will be posted on Blackboard 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.

Edward A. Keller

Publisher: Prentice Hall

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