Earth Sciences 20: Environmental Geology

General Information

Lectures:	Tu, Th, 10-11:45
Instructor:	Dr. Slawek Tulaczyk, E&MS Bldg. A208, 459-5207, tulaczyk@es.ucsc.edu (use email!)
Office hours:	MW 12-1 PM, or by appointment
Lab TA:	John Cook
2nd TA:	Stefano Mazzoni
Text:	Keller, E.A., 2000, Environmental Geology, 8th ed., Prentice Hall, New Jersey, 562 p.
Lab Book:	Foley, D., G.D. McKenzie, and R.O. Utgard, 1999, Investigations in Environmental Geology, Prentice Hall, 303 p.

Course Description and Goals

The aim of this course is to **increase your understanding of the problems that arise at the intersection between human civilization and its natural environment**. In the future, you may deal with such problems in your professional career. You may also use the knowledge acquired here to make yourself a better citizen of this planet. The planet provides us with all the resources that we need and constricts human activity with natural hazards (e.g., earthquakes.) The number of people grows fast and our appetite for space and material goods increases as well. We must carefully manage our relationship with the planet **to achieve long-term sustainability**.

During this course we will:

- learn basic earth materials and processes;
- understand the dynamic interactions between Earth's major systems;
- explore natural variability in these systems and their impact on society;
- investigate the impact of human activities on natural systems;
- consider the physical, chemical, and biological parameters necessary for the comfort and survival of our species;
- examine strategies for maintaining those parameters.

What Can You Expect From Me in This Course?

You should expect me to care about teaching and to work sincerely on engaging you in this course. The material I cover should be relevant and interesting. I should be open to questions in class and outside of class. You should expect to be treated fairly and not be ridiculed or embarrassed. You should expect that your work will be evaluated in a timely fashion and that it is clear to you why you get the scores that you do get.

What I Will Expect From You

I expect that you are taking this course because you have a sincere desire to learn about its subject and that you are ready to put in the work necessary to achieve new knowledge and skills. A standard time commitment is that for each credit hour a student should spend 2-3 hours on that course. I expect that you will treat me fairly as your teacher and that you will help me to make this course a good one by providing honest and constructive feedback.

Course Requirements

IF YOU ARE NOT TAKING THE LAB:

- attend and participate actively in lectures and discussion sections;
- complete all reading assignments and write two current event analyses;
- complete well two in-class exams;
- participate in one field trip and complete a field-trip report.

IF YOU ARE TAKING THE LAB:

- attend and participate actively in lectures and labs;
- complete all reading assignments;
- complete well two in-class exams and ten homeworks;
- participate in one field trip and complete a field-trip report.

Breakdown of Course Assessment

IF YOU ARE NOT TAKING THE LAB:

- midterm (25%) and comprehensive final (35%);

- lecture and section attendance and participation (20%);
- two current event analyses (10%);
- one field trip and a field-trip report (10%).

IF YOU ARE TAKING THE LAB:

- midterm (25%) and comprehensive final (35%);
- lab attendance and participation (6%);
- lab assignments (eight best out of nine, @ 3% each);
- one field trip and a field-trip report (10%).

DETAILS REGARDING EXAMS AND OTHER ASSIGNMENTS

FOR EVERYBODY:

Exams will include multiple choice, short answer, and essay questions on selected material covered in lectures and assigned readings. The final will be comprehensive.

One **field trip** will be organized to bring your classroom experience closer to the 'real world.' This will be a Saturday trip starting at 8:15 AM in the parking lot next to the Science Library. The trip is required and if you have legitimate reasons for an excused absence you have to contact the instructor in advance to arrange a make-up assignment. The **field-trip report** should be one to two pages long. In it you should discuss one particular problem discussed during the trip (no road logs, please).

Judgement of **participation** will be based upon overall quality of questions, comments and responses to questions and assignments during discussions in class sessions and individual conferences with the instructor and the TAs.

IF YOU ARE NOT TAKING THE LAB:

Current event analyses will give you an opportunity to report and discuss information about topics that are interesting to you and relevant to the topic of this course. Each analysis will focus on recent developments and news items. At least two newspaper or magazine articles should be used in preparing the analysis. In addition, students should also critically evaluate the covered news items. Each analysis should be at least one but not more than two pages long (double-spaced, standard font and type size).

IF YOU ARE TAKING THE LAB:

Lab assignments will consist of a combination of reporting on the activities undertaken during in-class laboratory exercises and additional questions or problems designed to expand upon your in-class experience.

HONOR CODE

For the duration of this course we will form a small community whose honor code should include the simple statement "that none of us will ever harm the interest of any other member of the community." How does that apply? For instance, cheating and plagiarism committed by one student are offenses against his/her peers who are actually doing the work themselves.

Earth Sciences 20: Environmental Geology
Lecture and Reading Schedule

Lecture	Date	Topic	Reading Assignment
		THE BASICS	
1	1/4	Logistics and fundamental concepts	Keller, Chapter 1
2	1/9	Earth materials and processes	Keller, Chapter 2
3	1/11	Soils and environment	Keller, Chapter 3
		NATURAL HAZARDS	
4	1/16	Natural hazards, rivers & flooding	Keller, Chapters 4, 5
5	1/18	Rivers & flooding	Keller, Chapter 5
6	1/23	Landslides and subsidence	Keller, Chapter 6
7	1/25	Earthquakes	Keller, Chapter 7
8	1/30	Volcanoes	Keller, Chapter 8
9	2/1	Coastal hazards	Keller, Chapter 9
10	2/6	MIDTERM	
		HUMAN IMPACT	
11	2/8	Advising day, no lecture but the lab does meet	
12	2/13	Water resources, supply and use	Keller, Chapter 10
13	2/15	Water resources, pollution and treatment	Keller, Chapter 11
14	2/20	Waste management	Keller, Chapter 12
15	2/22	Geology & health	Keller, Chapter 13
		NATURAL RESOURCES	
16	2/27	Mineral resources	Keller, Chapter 14
17	3/1	Energy and environment	Keller, Chapter 15
		GLOBAL CHANGES, LOCAL ISSUES	
18	3/6	Global change	Keller, Chapter 16
19	3/8	Air pollution	Keller, Chapter 17
20	3/13	Landscape evaluation and land use	Keller, Chapter 18

*** FIELD TRIP: Saturday,
*** FINAL EXAM: 3/18/2001 (Sunday!), 12-3 PM

Earth Sciences 20: Environmental Geology
Lab Information and Schedule

Location: E&MS D226
Instructor: John Cook
Contact Info: office - D229 E&MS Bldg., email: jcook@es.ucsc.edu, phone: 459-2838
Office hours: TBA
Times: W 6-9 PM
Th 12-3 PM
Lab Book: Foley, D., G.D. McKenzie, and R.O. Utgard, 1999, Investigations in Environmental Geology, Prentice Hall, 303 p.

All students are required to complete the assigned reading before each lab since there will be no time in class to catch up. Lab meetings will start with a short introduction by the lab instructor. Subsequently, selected exercises from the lab manual will be assigned. If you finish these exercises in class, you can turn them in to the instructor for evaluation. If you are not done with them at the end of the class meeting, they become your homework assignment. All completed exercises are due no later than at the beginning of the next lab period (i.e., you have one week to complete them). Completed assignments will be accepted only from those students who attended the pertinent lab meeting or have had an excused absence.

Lab	Dates	Topic	Reading Assignment
1	1/10, 1/11	Mineral and rock properties and identification	p. 1-18
2	1/17, 1/18	Maps, aerial photographs, satellite images	p. 19-38
3	1/24, 1/25	Volcanoes and earthquakes	p. 39-100
4	1/31, 2/01	Landslides, avalanches, subsidence	p. 101-130
5	2/07, 2/08	Flooding and coastal hazards	p. 131-158
6	2/14, 2/15	Water resources	p. 159-210
7	2/21, 2/22	Geologic resources and waste management	p. 211-238
8	2/28, 3/01	Geology and planning	p. 239-266
9	3/07, 3/08	Global environmental change	p. 267-296

Earth Sciences 20: Environmental Geology
Section Information & Schedule

Location: E&MS D226
Instructor: Stefano Mazzoni
Contact Info: office - C216 E&MS Bldg., email - smazzoni@es.ucsc.edu
Office hours: TBA
Times: T 12-1 PM
T 2-3 PM
W 3:30 - 4:30 PM
Th 6-7 PM

All students are expected to attend the lectures and to read the material assigned for lectures as preparation for the discussion sections. Depending on the judgement of the instructor, sections may include occasional quizzes.

Weekly discussion section topics (nine weeks total):

Week of	Topic
1/08	Minerals, rocks, and soils
1/15	Rivers and flooding
1/22	Earthquakes
1/29	Landslides and coastal hazards
2/05	Volcanoes
2/12	Water resources
2/19	Waste management, geology and health
2/26	Mineral and energy resources
3/05	Energy and environment, global change