

Geology 210: Environmental Geology

Spring 2006

Instructor: John D. Winter
Office: 150 Science Building (office hours posted on door and my web page)
Web page: <http://www.whitman.edu/geology/winter/>

Text: Keller, L *Environmental Geology* (8th edition, 1999)
Plus a few outside reading assignments

All readings are to be done *prior to the appropriate class.*

Put simply, geology is the study of the Earth. Environmental geology concentrates on the way Earth systems, both at the surface and within it, affect, and are affected by, humans. Those physical systems have both beneficial and detrimental effects on us. Earth's soils, water, mineral and energy resources provide our fundamental life-support system; while earthquakes, volcanoes, floods, landslides, etc. are hazardous to life and property. It is the objective of environmental geologists that, if we all understand these systems better, we can be more effective stewards of our threatened resources, and live safer lives in greater harmony with our environment.

We will begin with a very brief, and broad-scope review of basic geological principles to provide a basis for the more focused environmental aspects that follow. We will discuss rocks and minerals, the Earth's interior, plate tectonics, and surficial processes. Then we will proceed to more detailed discussions of geologic hazards, human-geology interactions, and finally resource and land-use issues.

There will be one **field trip** on Sunday April 2nd (unless I get a groundswell of opposition to that date). I consider field experience a vital part of geological learning, since geology really happens outside the classroom. The trip is **NOT OPTIONAL**. It will be fairly local, should last about 7 hours, and a brief field-trip report will be due following each one. Come prepared with sturdy shoes, warm/waterproof clothes (depending on the weather), a notebook, lunch and water. We depart at 8:30 am from the lot behind the Hall of Science (so you can still catch breakfast in the dorms). Be on time. We will return by 3 pm. The reports should be in outline form, typed, 2-4 (double-spaced) pages, and address geologic hazards, human impacts, and land-use planning/resource aspects of what you observed on the trip.

There will also be some sort of active component to the course, in which you can apply some of the things that you learn. Thus there will be a **project** in which teams of you will work on a practical application of some of the class concepts. These will be substantial projects, involving library and map work. I will have more details on the project later in class.

Grading:

Labs	100
Field Trip Report	25
Exam 1	100
Exam 2	100
Final	100
Project	150
<u>Participation</u>	<u>50</u>
Total	550

Class Schedule

<u>Week</u>	<u>Subject</u>	<u>Readings</u>	<u>Lab</u>
Jan 17 (no class Mo)	Introduction, Basics	Ch 1, 2	Minerals
23	Geological principles	Ch 2	Igneous
30	Soil sustainability	Ch 3	Sedimentary
List of site choices for EIS project due no later than Jan 30			
Feb 6	Hazards, Floods	Ch 4, 5	Metamorphic or Field Trip
13	Landslides	Ch 6	Field Trip
<hr/> Exam 1 Thursday Feb 13 <hr/>			
21 (no class Mo)	Earthquakes	Ch 7	Topography or Field Trip
Preliminary analysis for EIS project due Feb 21			
27	Volcanoes	Ch 8	Field Trip
Mar 6	Water supply	Ch 10	Rivers/Flooding
27	Water Pollution	Ch 11	Mass Wasting
Apr 3	Waste Management	Ch 12	Structure
<i>April 4: Whitman Undergraduate Conference – No classes. Please plan to attend the sessions!</i>			
<hr/> Exam 2 Thursday April 6 <hr/>			
10	Land Use Planning	Ch 18	Plate Tectonics
17	Mineral Resources	Ch 14	Geological Maps
24	Energy	Ch 15	
May 1	Earth Systems and Global Change	Ch 16	
8	Closing Comments/Discussions		
EIS project due May 4			
Final Exam Friday, May 12, 9-11 am			