

ENVIRONMENTAL GEOLOGY, 51-150 (4 credits)
Fall 2008

Lecture Hours: 9:10 - 10:10 a.m MWF

Class Location: Lecture: Halsey 106

Laboratory: Harrington 103

Instructor: Dr. Maureen Muldoon
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Office Hours:
Monday 10:20-12:30
Wednesday 10:20-12:30
Thursday 12:40-1:40
Friday 10:20-11:20
Or by appointment

Lab Instructors: Maureen Muldoon (Secs 01, 04, 06, 07, 08)
Christie Demosthenous (Secs 02, 03, 05); demosthe@uwosh.edu, H207, 424-3154
All labs begin the second week of classes (week of Sept 8th) in room 103 Harrington.

Required Materials:

Lecture Text: • *Introduction to Environmental Geology*, Edward Keller, 4th edition. The lecture text website (see first page of text) includes on-line practice quizzes, a study guide that highlights the learning objectives of each chapter, and relevant web links.

Lab Text: • *Environmental Geology Laboratory Manual*, C. W. Fetter (Fall 2008 edition)

Other: • Instruction response pad

About this Course:

What is Environmental Geology?

Geology is the science of the Earth including study of the processes related to its composition, structure, and history. It's *not* naming rocks. The study of the Earth is a pretty broad topic and geology draws on our knowledge of physics, chemistry, mathematics, and biology to help us understand Earth processes. Geologists perform a wide variety of tasks such as finding resources, helping clean up environmental messes, mapping geologic hazards, and researching basic Earth processes to gain a better understanding of how the planet works. Environmental Geology is basically applied geology and it focuses on the interaction of geology and humans.

Course Description

Environmental Geology is a survey course that counts as a Laboratory Science general education course. The course can be divided into four main sections (as is your book) 1) foundations, 2) earth processes and natural hazards, 3) resources and pollution, and 4) environmental management. In the first section we'll explore earth's place in space and time, outline some fundamental concepts of environmental geology, gain an understanding of minerals and rocks, and take a brief look at geologic time.

Once we have some fundamentals under our belt, we'll look at specific geologic processes that shape our planet and some hazards associated with them. Specifically we'll learn about structure of earth and the processes that drive plate tectonics. We'll then move on to internal processes such as earthquakes and volcanoes. After that we'll explore the geologic processes that occur on the Earth's surface including stream processes and flooding, slope processes, and the processes of weathering and soil formation.

We'll then explore the various geologic resources that we, as a society, depend upon and how the development and use of those resources can impact the environment. We'll learn about the hydrologic cycle and water resources, water pollution, mineral resources, and energy resources. Finally we'll explore the Earth's climate, examples of extreme climate and how man's activities impact climate.

Course Objectives

At the end of this course you should have an understand geologic principles related to earth materials and processes and be able to apply these principles to geologic hazards and earth resources. So how will all this knowledge of Earth processes help you later in life? Maybe I'm biased, but I think it's a good idea to know the basics about where you live. In your house (apartment) it is useful to know where the circuit breakers and water shut-off valve are located in case something happens and you need to deal with it. Similarly, it's good to know how earth processes work so that you, as an individual, and as a citizen make reasonable choices about resource use and land-use. Secondly, geology is fun (OK, I am biased) and as you travel around this planet and see different landscapes you'll have a greater appreciation of how they got here.

But equally important to any geologic information that you take away with you is the ability to ask questions, observe patterns, evaluate data, distinguish between observations and interpretations, catalog new information and put it together into a coherent whole – basically figure out how and why something works. This is the underlying basis of any science. Even if you have no intention of being a scientist, these skills are useful and transferable.

Expectations:

Lecture:

We cover a great deal of material in this course and it is important to stay caught up with the reading and lecture material. *It is your responsibility to attend lecture and complete the reading assignment before coming to class.* There are many reasons to complete the reading assignment prior to the lecture.

- It will give you familiarity with the topics and terms before I start discussing them. (Note: There is a glossary in the back of the text to help you with new terms).
- Because you've seen the material before, you will know what parts are clear to you and what parts you found confusing. That way you can get any questions cleared up during the lecture
- You'll take better notes.

I also recommend printing the lecture outline and PowerPoint presentation prior to the lecture. These can be found in the Content section of the course D2L site (see below). Please print several slides per page to save paper.

During the next 14 weeks we will cover portions of 13 chapters in your text. *You will be responsible for the material in the text as well as the material that I cover in the lectures.* Lecture presentations will include material to supplement the text. Your success in the course will be greatly enhanced if you attend every lecture.

Lab: Attendance of laboratories is required.

Outside Material:

Desire2Learn (D2L) Site:

I have developed a D2L site for this course. You must login to the D2L system using the same username and password that you use to access your UW-Oshkosh email account.

When you login you will see general D2L announcements and a list of your D2L courses. Within the Environmental Geology course, there is a navigation bar above the announcement area that contains the following tabs: Course Home, Content, Grades, and Classlist. The course calendar can also be accessed through the schedule link at the very top of the page (above the course name).

Tutoring:

The Geology Department offers tutoring to all students enrolled in our introductory courses. Geology majors are available to help you with any questions concerning the lecture or lab material for this course. A tutoring schedule will be posted on the D2L site once it is finalized.

Grading Basis:**Exams (400 pts):**

There will be four multiple choice exams, each worth 100 points. Lecture exams will be objective, computer-scored exams. No make-up exams will be given unless the student has contacted me *prior* to the exam and has an *excused absence* that caused them to miss the scheduled exam. You **must** bring your student ID and a number 2 pencil to each lecture exam.

Note: These dates should **not** be considered final and are subject to change.

Exam 1	Monday, September 29	(Chapters 1-3, and geologic time)
Exam 2	Wednesday, October 22	(Chapters 5, 6, 7, and 8)
Exam 3	Friday, November 14	(Chapters 11, 12, and 15)
Exam 4	Friday, December 12	(Chapters 13, 14, and 18)

An optional review session will be held before each examination. You are expected to arrive at the review sessions prepared to ask questions about the material. I suggest that you complete both the chapter-by-chapter study guide (written by me and available in D2L) and the practice multiple-choice quizzes provided by the textbook publisher, prior to the review session.

In-Class Participation (50 pts):

There is a good deal of research that suggests that students learn better when they are actively engaged with the material (through discussion, in-class exercises, etc). This is difficult in a large lecture class, but one method of increasing student engagement has been the “wireless classroom”.

We will be using the eInstruction classroom performance system (CPS) this semester. You should have purchased a wireless response pad (aka clicker) when you purchased your texts. You will need to go online and activate the pad. I will be providing cards that contain the activation code (so that you won't need to pay the \$10 fee). Instructions on how to register your response pad will be included in the Course Information section of the D2L site.

The system keeps track of student responses and I will use this information as part of your overall course grade. I expect to use the classroom performance system in a variety of ways including in-class quizzes, concept questions, and in-class reviews.

Lab (150 pts):

Lab attendance is required. Each week's laboratory exercise is due at the end of your lab session. Four, non-comprehensive lab exams will be given (each worth 30 points of overall course grade). They will be a mixture of objective and short essay questions. Your score for laboratory will be the total of your scores on exams (120 points) plus an additional 30 points based on completeness of lab exercises.

Grading Scale: There are 600 possible points in this course. Overall 75% of the points (450 possible) are earned from the lecture portion of the course and 25% of the points (150 possible) are earned in the lab portion of the course. The final letter grade will be assigned according to the following scale (although this scale may be adjusted if necessary).

<u>total points</u>	<u>Letter Grade</u>	<u>total points</u>	<u>Letter Grade</u>
540 - 600	A	420 - 449	C
510 - 539	AB	390 - 419	CD
480 - 509	B	360 - 389	D
450 - 479	BC	<360	F

Extra Credit: There is no extra credit in this course. You should invest your energy in keeping up with the material and studying for the lecture and lab exams.

Special Needs: Any students who need special accommodations for learning or who have special needs are invited to share these concerns or requests with the instructor as soon as possible.

Academic Dishonesty:

Academic dishonesty/cheating, in any form, will not be tolerated. All work submitted must be your own. Violations will result in a score of zero on the assignment and will be reported to the Dean of Students for further disciplinary action. See the *University of Wisconsin Oshkosh Student Discipline Code* <http://www.tts.uwosh.edu/dean/studentdisciplinecode.html> for definitions of academic misconduct and details about procedures, sanctions, and other relevant information.

Tentative Course Schedule:

This schedule may change slightly. The D2L calendar will reflect any changes. The syllabus for the laboratory portion of the course is included in your lab manual.

SUNDAY	MONDAY	WEDNESDAY	FRIDAY
August 31	Sept 1	3 Introduction	5 Ch1: Earth in Space & Time, pg 5-8, Science pg 25-33
NO LAB			
September 7	8 Ch1: Fund Concepts pg 10-25	10 Ch3: Minerals pg 67-81 (skip weathering)	12 Ch3: Minerals pg 67-81 (skip weathering)
LAB: Minerals (A1)			
September 14	15 Ch3: Rocks sections 3.3, 3.5-3.7	17 Ch3: Rocks/Rock Deformation sections 3.8-3.9	19 Geologic Time section 3.4 & Appendix D
LAB: Rocks (A2)			
September 21	22 Ch2: Earth Structure sections 2.1-2.2, 2.4	24 Ch2: Plate Tectonics sections 2.3, 2.5-2.7	26 Ch5: Natural Hazards, sec 5.1-5.3, & Review
LAB: Exam 1 (Minerals & Rocks); Introduction to Water Quality & Fox River Sampling (E1)			
September 28	29 Lecture Exam 1 Chapters 1-3 & Geologic Time	Oct 1 Ch5: Earthquakes	Oct 3 Ch5: Earthquakes
LAB: Water Chemistry (E2)			
October 5	6 Ch6: Volcanoes	8 Ch6: Volcanoes	10 Ch6: Volcanoes
LAB: Field Trip			
October 12	13 Ch7: Rivers & Flooding	15 Ch7: Rivers & Flooding	17 Ch8: Slope Processes
LAB: Exam 2 (Water Quality & Field Trip); Construction of Contour Map (C1)			
October 19	20 Ch8: Slope Processes	22 Lecture Exam 2 Chapters 5, 6, 7 & 8	24 Ch11: Water Resources
LAB: Construction of Contour Map (C2)			
October 26	27 Ch11: Water Resources	29 Ch11: Water Resources	31 Ch12: Water Pollution
LAB: Environmental Geology Maps (C3)			
November 2	3 Ch12: Water Pollution	5 Weathering: Boxes pg 76 & 79	7 Ch15: Soil Resources
LAB: Exam 3 (Maps C1, C2, C3); Sediment Identification and Properties (B1)			
November 9	10 Ch15: Soil Resources	12 Catch Up/Review	14 Lecture Exam 3 Chapters 11, 12, 15
LAB: Agricultural Soils (B2)			
November 16	17 Ch13: Mineral Resources	19 Ch13: Mineral Resources	21 Ch14: Energy Resources
LAB: Stream Processes (D1) & Aquifer Properties and Groundwater (D2)			
November 23	24 Ch14: Energy Resources	26 No Class	28 No Class
No Lab – Thanksgiving Break			
November 30	Dec 1 Ch14: Energy Resources	3 Ch18: Climate & Climate Change	5 Ch18: Climate & Climate Change
LAB: Exam 4 (Soils (B1, B2), Streams (D1) & Groundwater (D2))			
December 7	8 Ch18: Glaciers	10 Catch Up/Review	12 Lecture Exam 4 Chapters 13, 14, 18
NO LAB: Made up for by Field Trip			