GEO 111: EARTH SYSTEM SCIENCE FALL 2007

Earth System Science is an exploration of the four interacting components that shape our environment: the hydrosphere (water and ice), the atmosphere (air), the geosphere (earth), and the biosphere (life). The earth is ~4.6 billion years old and has evolved through time. Earth's systems are constantly changing at rates from microseconds to hundreds of millions of years. Processes which shape the earth and impact our lives occur at a variety of scales from subatomic to astronomical. In recent time, the human population has increased rapidly from ~ 1 billion in 1800, to near ~6.5 billion today, and is projected to reach more than 9 billion by 2050. Since earth has finite limits and resources, humans have become an important force in shaping the environment. In this course, we will examine the structure of our planet, earth materials, and the processes acting through time, which have shaped the earth and continue to reshape it today. This background will serve as a departure point for those who choose to pursue a minor in Earth System Science or Environmental Science. For those choosing other paths, this introduction will enable you to make informed decisions concerning development of our planet, resource exploitation, energy consumption, land use, and waste disposal.

Course Objectives:

1. Improve your powers of observation by identifying rocks and structures
2. Gather and analyze data to interpret the tectonic setting and geologic history of the Mid-South area.
3. Analyze an environmental issue in light of principles learned in ESS, make a decision and support that decision.
4. Improve skills of working in groups, giving a power point presentation, and teaching your peers.

Course Information:

Prof. C. Ekstrom, 116E RT. Office Hours: M 9:30-10:30 am, Th 11-12 or by appointment.
Phone 3089, home phone 458-6180 before 9pm, email: cekstrom@rhodes.edu
Time: Lecture T,Th 9:30-10:45am Kennedy Rm 208 Lab T 12:30-3:30pm 132E RT
Text: Understanding Earth, 5th ed., $25 lab fee – pick up lab notebook in RT213 by 8/28.

My Expectations of you: This course will involve a combination of lecture, hands-on activities, and group work during *both* lecture and lab meetings. I expect you to attend every class meeting and to be engaged and working during class time. There will be 3 excused absences. A weekend field trip to Ouachita Mountains in AR on 11/3-4 is required. If you can not attend, you should drop the course.

It is essential for you to keep up with the assignments and be prepared for each class. Your ability to understand class material is often dependent upon your preparation. In addition, there will be pop quizzes. The power point lectures will be available before class. I recommend that you print a handout and bring it to class \\Fileserver1\acad_dept_pgm\Geology\Ekstrom_Carol\Public

Course Evaluation:

The work in lecture and lab is intertwined as closely as possible. You will receive the same grade for lecture and lab. A group grade will be given for the group project with input from the group, the class, and the Prof.

The following point scheme will be used to assign grades:

1.	3 lecture exams	35%
2.	Comprehensive Lab Final	15
3.	Group Project	20
4.	Quizzes, lab reports (4), term paper	30
	Total	100

- Lab reports are due at the end of lab. Assignments are due on due date. Late=30% off.
- Contact me before an exam if you are unable to take it, otherwise grade is 0.

Grades will be posted on WebCT

Group Project: Public Hearing and Debate on Disposal of High Level Radioactive Wastes at Yucca Mtn., Nevada.

Term Paper: details will be given in class

SCHEDULE FOR GEO 111 FALL 2007

Date	Lecture Topic	Assignments
8/ 23	Syllabus, Observations, Model for Learning Science	
28	Observations & Earth System Science	Ch 1, Reading
30	Gallery Walk & Introduction to Yucca Mt.	Read "We are all Panamanians" & "Indonesian Valve" , http://www.ocrwm.doe.gov/
9/ 4	**Name Quiz,** The Tectonic System	Ch 2
6	Plate Tectonics	Ch 2,
11	Minerals and the Rock System	Ch 3
13	Igneous Rx	Ch 4
18	Sedimentary Rx and Petroleum Resources	Ch 5, p.553-563
20	Metamorphic Rx **Exam 1 7-8:30pm**	Ch 6 **Stone and Gravel report due 9:30am**
25	Discuss exam, Rx deformation	Ch 7
27	Rx deformation	Ch 7
10/ 2	Group work on Yucca Mtn.	p.564-565 **Chickasaw Bluff rept due9:30am**
4	Group work on Chickasaw Bluffs report	
9	Geologic Time	Ch 8
11	Evolution of Continents	
16	Fall break	
18	Volcanoes	Ch 12
23	Earthquakes	Ch. 13
25	Earthquakes **Exam II 7- 8:30pm**	Ch 13
30	Group work on Yucca Mtn.	
11/ 1	Discuss exams, Arkansas Geology,	p. 491-495, field guide
11/3-4	**Field Trip to Arkansas --- required**	
6	No lecture	
8	Earth Interior- magnetic field	Ch 14 **Field Trip Rept. Due 9:30am**
13	Cypress Middle School – Mineral Identification	
15	Climate Systems and Weathering	Ch 16
20	Balance between climate & tectonics	Ch 22
22	Thanksgiving Break	
27	Human Impacts	Ch 23 **Term Paper due 9am**
29	**Public Hearing**	
12/ 4	**Debate on Yucca Mt.**	
12/7	**Lab Final at 5:30pm**	
12/11	**Exam III at 5:30 pm**	

Date	Lab Topic	Assignment
8/28	Minerals – What mineral are you wearing?	Ch 3
9/4	Igneous Rx and Plate Tectonics	Ch 4, GIS 1.2 , p. 494-500, **Mineral Quiz**
9/11	Stone and gravel field trip	Ch 5, Miss Geo. Survey articles
9/18	Sed rx , work on Stone and Gravel Rept	Sand & Gravel report due 4pm
9/25	Chickasaw Bluffs Field Trip until **4:30 pm**	Ch 6
10/2	Work on Chickasaw Bluff report	Jibson and Keefer article
10/9	Meta rx and exposures	Ch. 16
10/23	Elements of Geologic Maps	Ch 7 **Rock Quiz**
10/30	Work on Yucca Mtn.	
11/6	Work on AR field trip report	
11/13	Geologic Maps	Ch 7
11/27	Geology of TN and your home state	Ch 7 **Structure Quiz**
12/4	Review	