

The Violent Earth

Geology 302

Fall 2005
Tues./Thurs. 9:35-10:50
Thornton Hall, room 432

Instructor contact information

Dr. Mary Leech

Thornton Hall, room 515

Office hours: Tues. 10:50-12:00 or by appt.

Tel: 415-338-1144

E-mail: leech@sfsu.edu

OBJECTIVES OF THIS COURSE

Course emphases will be on the basic geologic principles underlying natural disasters such as earthquakes, volcanic eruptions, landslides, floods, and wildfires. Many examples will be drawn from the western U.S. and California specifically. Students will learn how human activities contribute to and are impacted by natural disasters.

ATTENDANCE

It is very important that you attend class; I will cover material that is not in the textbook and complete in-class exercises. You will be responsible for this material on the exams and you will enjoy this class much more if you show up (and you will end up doing less work outside class if you attend every lecture). I also point out the most important information to learn for exams during lectures — i.e., you may get answers to exam questions during class.

EXERCISES

You will be required to complete and turn in individual work on several exercises/homeworks. You may do parts of the exercise during class and/or take it home to turn in the following week. If you begin the assignment in class, you will be able to work with other students in pairs or in groups and have the benefit of asking questions during class. If you miss class (and therefore an exercise), you can download the assignment from the course web page. I will strictly enforce due dates for these exercises because I will post answer keys to assignments on the class web site. I will not accept late work, not even for partial credit. Exercises/homeworks are due no later than the beginning of class on the due date. While I will only use the 10 highest scores on these exercises/homeworks in calculating your grade, you will be responsible for the material from ALL of the exercises/homeworks for the exams.

MISSED CLASSES AND EXAMS

Please let me know *before* class if you will miss class, be late, or need to leave early. You must take the exams during class on the scheduled day. If for some reason you need to miss an exam, you should contact me before the exam and schedule a time to meet to make further arrangements. Make-up exams will be given only in cases of genuine, officially-documented need.

MEDIA ACCESS CENTER

I will show several videos and video clips during class; some exercises/homeworks will be based on these videos. If you miss class, you may view the videos at the Media Access Center beginning after the class during which it is shown (or after the second class during which it is shown in the case of a video that spans more than one class meeting). Hours and location for the Media Access Center can be found at <http://www.library.sfsu.edu/servcoll/mac.html>

COURSE WEB SITE

You will find all course information, class handouts, PowerPoint slides from lecture, exercises and keys, and relevant web links will be available at this web site. Other WWW resources are available via links on the course web site.

<http://funnel.sfsu.edu/courses/geol302.1>

REQUIRED READING

The required textbook for this course is *Natural Disasters* by Patrick Abbott (5th ed.). You should at least scan the readings listed below *before* class and you are expected to read everything assigned in preparation for the exams. Please bring your textbook to class. There are copies of the textbook on reserve in the library – one copy is the current 5th edition and two copies are older 3rd and 4th editions that do not contain more current natural disaster events, but are useful for the general science and older events (e.g., the 1906 San Francisco earthquake). The reserve collection call numbers are LEEMA b2 (4th edition) and LEEMA b1 (3rd edition).

DISTRACTIONS IN CLASS

Please turn off all cell phones, pagers, and any other distracting electronic devices during class. If you must make or receive a call during class, please speak to me before class.

DISABILITY PROGRAMS AND RESOURCE CENTER — Reasonable accommodations will be made for any students with disabilities; speak with the instructor directly.

GRADING POLICY

The grades assigned in this course will be based on the below scale. Grades on in-class assignments and exams are final. If you believe a mistake has been made in the grading, you can re-submit the assignment or exam to be re-graded. If you choose to submit your assignment/exam for re-grading, I will re-grade your entire assignment/exam; you may not only gain points, but you may lose points if other mistakes are found. I will not negotiate grades.

Point values for graded assignments and exams

Participation (regular attendance, asking questions, group discussion)	15 points
These points will be assigned at my discretion based on your participation	
In-class exercises (10 exercises, 15 points each)	150 points
I will use the 10 highest scores for exercises in calculating your grade	
Midterm exam	150 points
Final exam	200 points
Total possible points	515 points

Percentage out of total possible 515 points:	Points earned	Grade
92-100	471-515	A
87-91	445-470	A-
84-86	430-444	B+
80-83	409-429	B
77-79	394-408	B-
74-76	378-393	C+
70-73	358-377	C
67-69	342-357	C-
64-66	327-341	D+
62-63	317-326	D
60-61	306-316	D-
59 and under	305 and under	F

Date	Day	Reading	Topic	Exercise due date
8/25	Th	—	Introduction <i>Discovering Plate Boundaries I</i>	9/1
8/30	T	Ch. 1	<i>Discovering Plate Boundaries II</i>	
9/1	Th	Ch. 2	Earth structure, rocks, geologic time	
9/6	T	Ch. 3	Plate tectonics I	
9/8	Th	Ch. 3	Plate tectonics II Plate tectonics exercise	9/15
9/13	T	Ch. 4	Faults, earthquakes, and seismology I	
9/15	Th	Ch. 4	Faults, earthquakes, and seismology II Seismology exercise	9/22
9/20	T	Ch. 5	Earthquakes and plate tectonics	
9/22	Th	—	<i>Earthquake: Where the Fault Lies</i> video	9/29
9/27	T	Ch. 5	The San Andreas fault	
9/29	Th	Ch. 6	Historical earthquakes in North America Earthquakes exercise	10/6
10/4	T	Ch. 1 (p. 7-10), Ch. 4 (p. 106-112), Ch. 8 (p. 219-220)	Tsunami	
10/6	Th	—	Tsunami	
10/11	T	Review	Midterm exam	
10/13	Th	Ch. 7	Volcanoes and volcanic rocks I	
10/18	T	—	Class cancelled	
10/20	Th	Ch. 7	Volcanoes and volcanic rocks II	
10/25	T	—	<i>Understanding Volcanic Hazards</i> video	11/1
10/27	Th	Ch. 7,8	Volcanism and plate tectonics	
11/1	T	Ch. 8	Predicting volcanic eruptions	
11/3	Th	—	<i>In the Path of a Killer Volcano</i> video	11/8
11/8	T	—	Volcanic Hazards and Hollywood <i>Dante's Peak I</i>	11/15
11/10	Th	—	<i>Dante's Peak II</i>	
11/15	T	Ch. 13	Flooding Flooding exercise	11/22
11/17	Th	Ch. 12	Coastal processes and erosion	
11/22	T	Ch. 9	Mass movements Landslide exercise	11/29
11/24	Th	—	No class — Thanksgiving holiday	
11/29	T	Ch. 14	Fire	
12/1	Th	Review	<i>Discovering Plate Boundaries III</i>	Due in class
12/6	T	Review	Class cancelled	
12/8	Th	Review	Class cancelled	
12/13	T		Comprehensive final exam 8:00-10:30	

Our Violent Planet, Segment III cluster of the General Education program

Geology 302 *The Violent Earth* fulfills part of the science requirement in the cluster "Our Violent Planet, a part of Segment III of the General Education program, which exposes students to the causes for the natural hazards associated with the earth, the atmosphere and the oceans. Students explore the sensitive balance that characterizes the natural systems on our planet and the serious consequences that human activity may have on disturbing this balance. This cluster covers such important topics as earthquake prediction and safety, hurricanes and coastal flooding, severe thunderstorms and tornadoes, landslides and mudflows. The cluster also examines the relationship of human activity, preconceived notions, and cultural and political values to the occurrence and consequences of environmental disasters that often put individuals at risk. Students acquire an appreciation and understanding of the diversity of cultural responses to catastrophic environmental stimuli and the direct role human activities may have in modifying the environment. They also explore alteration of local and global climatic regimes and the effects they have on weather patterns.

For this course to fulfill the Segment III requirement, students must meet the following conditions: 1) complete at least nine units of upper division course work in residence at SFSU in a single Segment III cluster; 2) begin their Segment III course work during or after the semester in which they achieve upper division junior standing (i.e., 60 semester units), but NOT before; 3) begin their Segment III course work only after completing all General Education Segment I requirements; 4) fulfill all of the specific requirements for completing the cluster; 5) complete at least one course in the Segment III cluster that is both outside the major department and outside the major program submitted on the official Application for Graduation; and 6) complete at least one course in the Segment III cluster that is designated as fulfilling the Cultural, Ethnic, or Social Diversity (CESD) Requirement. Please also note that courses taken to fulfill Segment III cluster requirements may not also be used to fulfill Segment II requirements or the U.S. History and Government requirement, including the California State and Local Government component.

Students must select two courses from Category A and one course from Category B to fulfill the *Our Violent Planet* Segment III requirement:

Category A	Science Background	CESD	Prerequisite
GEOL 302	The Violent Earth (3 units)	No	None
METR 302	The Violent Atmosphere and Ocean (3 units)	No	None
Category B	Cultural Perspectives	CESD	Prerequisite
GEOG 402	The Climatic Challenge (3 units)	Yes	None
GEOG 600	Environmental Problems and Solutions (3 units)	Yes	None
PLSI 354	Politics, the Environment and Social Change (3 units)	Yes	None