

**Geology 417a/517a—Geophysics seminar
a.k.a. Earthquake seismology
Lectures MWF, 11:00-11:50 a.m.**

Instructor: Jackie Caplan-Auerbach
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Office hours: Monday, Wednesday, 1:00-2:00 p.m., or by appointment

Date	Topic	Homework
Wednesday, 9/27	Intro to class, a bit of earthquake history	
Friday, 9/29	History of seismology/software intro	
Monday, 10/2	Stress and strain	
Wednesday, 10/4	Seismic waves, seismic phases, seismic velocities	HW #1 due
Friday, 10/6	Snell's Law and ray paths	
Monday, 10/9	Fourier transforms and power spectra	
Wednesday, 10/11	Signal processing and attenuation	HW #2 due
Friday, 10/13	Seismometry	
Monday, 10/16	Catch up and review	
Wednesday, 10/18	MID-TERM EXAM #1	
Friday, 10/20	Magnitude	
Monday, 10/23	Magnitude and Gutenberg-Richter laws	
Wednesday, 10/25	Faulting/focal mechanisms	HW #3 due
Friday, 10/27	Plate tectonics and earthquakes	
Monday, 10/30	<i>Jackie out of town, work on term projects</i>	HW #4 due
Wednesday, 11/1	Earthquakes and plate tectonics	
Friday, 11/3	Global seismic data	
Monday, 11/6	Global seismic data and Earth's interior	
Wednesday, 11/8	MID-TERM EXAM #2	
Friday, 11/10	<i>VERTERAN'S DAY, NO CLASS</i>	
Monday, 11/13	<i>Jackie out of town, work on projects</i>	
Wednesday, 11/15	Earthquake location	HW #5 due
Friday, 11/17	Earthquake locations	
Monday, 11/20	Earthquake hazards	
Wednesday, 11/22	Earthquake hazards	HW #6 due
Friday, 11/24	<i>THANKSGIVING, NO CLASS</i>	
Monday, 11/27	Local hazards—earthquakes in Cascadia	
Wednesday, 11/19	MID-TERM EXAM #3	
Friday, 12/1	Earthquake prediction	
Monday, 12/4	Earthquake prediction	HW #7 due
Wednesday, 12/6	Volcano seismology	
Friday, 12/8	FINAL PROJECT POSTER SESSION	TURN IN FINAL PROJECT REPORT

Class goals: As residents of the Pacific Northwest, you live in one of the most seismically hazardous areas on Earth. Happily, you also live in a time when technology has given us the ability to live comfortably with major earthquakes and to understand their behavior. This class represents a part of that process. My goal for you is that you will come out of this class with a better understanding for the physics of earthquakes, the processes that cause them, the techniques used to study them and the hazards

associated with them. We will also investigate topics such as earthquake prediction and the role of seismology in geologic thought. Because this is a seminar with a diverse student body, the course is not intended to be a thorough overview of quantitative seismology. Instead we will investigate certain seismological topics in more detail than is possible in a survey course, while focusing on systems and processes rather than mathematical derivations.

Grades: Grades in this class will be based on a combination of assessments. There will be three mid-term exams of equal weight, and a series of homework assignments, some of which will require calculations, some of which will be short-answer. The course also includes a term project which will be presented in a poster session on the last day of class. You will also turn in a write-up of the project at that time. There will be no final exam (your professor will be at a conference that week anyhow). Final letter grades are based on: 100-92.5% = A; 92.4-90% = A-; 89.9-87.5% = B+; 87.4-82.5% = B-; 79.9-77.5% = C+, 77.4-72.5% = C; 72.4-70% = C-; 69.9-67.5% = D+; 67.4-62.5% = D; 62.4-60% = D-; <60% = F.

Extra credit: One of the goals of this class is to encourage you to understand earthquake hazard and be prepared should a major earthquake hit. To that end, you can get up to XX extra credit points for putting together an earthquake disaster kit for you and your household. To earn the points, you must submit photos of your disaster kit as well as a list of items contained in it and explain how the kit will be stored and used in the event of a disaster. For information on disaster kit preparation, try one of these websites, or do a web search for “earthquake preparedness” or “disaster kit”:

Red Cross: http://www.redcross.org/services/disaster/0,1082,0_217_00.html

ABAG: <http://www.abag.ca.gov/bayarea/eqmaps/fixit/plansupplies.html>

FEMA: http://www.fema.gov/areyouready/assemble_disaster_supplies_kit.shtm

Incidentally, I too will put together an emergency kit this quarter. If I fail to do it, everyone gets extra credit points.

Office hours and contact: Please do not hesitate to contact me during my office hours or by appointment if those hours do not work with your schedule. You may also email me at the address shown above. If there is a problem and you are unable to attend one of the exams, *it is your responsibility to tell me in advance and work out an alternative.*

Academic success and support services: Please feel free to talk to me anytime about your performance in the course or possible ways you can improve. Academic support services are also available if you need them. Tutors are available for a fee through the Tutorial and Academic Skills Center (TASC) at 650-3855 or <http://www.wvu.edu/depts/tutorialcenter/home.htm>. If you need disability-related accommodations, please notify Student Support Services at 650-3083 (phone) or 650-3725 (TTY) or <http://www.wvu.edu/depts/drs/>

Academic honesty: You are responsible for knowing the university policies on Academic honesty and plagiarism which may be found at <http://www.library.wvu.edu/ref/plagiarism.html>. I will expect that you understand what plagiarism is, and how to avoid it, but if you have any questions, please ask me rather than risk accidentally committing an act of academic dishonesty. I recognize that you will talk with your classmates about homework assignments, particularly problem sets.

However, *you are required to do the work yourself*. This means that although you and a friend may have similar ideas about how to answer a question, you must write them up completely separately. Again, see me if this is not clear.

Attendance, Tardiness, Leaving Early, and Cell Phones: Attendance is not mandatory and you will not be marked down for any absences but please understand that this is a lecture course and in order to get the information, you will have to be in class taking notes. If you cannot attend a class, please get notes from your classmates. I'll be happy to answer any questions you have about the notes but I will not supply you with my own.

I recognize that circumstances beyond one's control often lead to tardiness, and as a consequence I will not have a problem with you showing up a few minutes late once in a while. I WILL have a problem if you consistently arrive late. Late arrivals disrupt everyone so please be considerate of your fellow students and me and get to class on time. If you have to be late, take the first available seat you can find. The same thing goes for leaving early. If for some reason you must leave early, please choose a seat where your departure will be the least disruptive to the class.

Regarding cell phones... under NO circumstances should a cell phone or pager ring or ever be answered in class. If you are waiting for an important call, please let me know, but recognize that I may ask you to wait for your call outside. If there is a circumstance that requires you to be in cell phone or pager contact (if, for example, you moonlight as an EMT or you're awaiting the birth of your first child), please discuss this with me in advance of class. If your cell phone rings in class, you will be asked to leave. If you answer your phone in class you will be asked to leave and not return.