

# GEOL 106 Course Syllabus

## Earthquake Country (3 units)

Humboldt State University  
Department of Geology  
Arcata, CA 95521

Fall 2016

**Lecture:** CRN 25522 Section 2 TR 15:00 – 16:20PM Room FH 118

**Instructor:** Jason Robert Patton

**email:** [Jason.Patton@humboldt.edu](mailto:Jason.Patton@humboldt.edu)

**Office:** Founders Hall 136

**Phone:** 707.826.3923

**Course Website:** [http://www.science.earthjay.com/?page\\_id=4884](http://www.science.earthjay.com/?page_id=4884)

**Required Text:** John Clague et al., At Risk: Earthquakes and Tsunamis on the West Coast, 1<sup>st</sup> ed., 2006 (re: the low price for a text book: you are welcome!)

Additional reading material will be supplied via the website. This is also required reading material, but you won't need to pay for it!

**Office Hours:** Tuesday 13:00 – 15:00

**Required Supplies:** three ring binder for class handouts including blank paper for drawing illustrations and notes during class; colored pencils for making illustrations, calculator (smart phone is OK), and 882-E Scantron Sheets available at the bookstore (about 13, we will use about 1 per week).

**Contact:** Please don't hesitate to email me with any questions, comments, or concerns. I welcome any feedback or suggestions. The best way to contact me for any reason is by sending an email directly to my HSU email [Jason.Patton@humboldt.edu](mailto:Jason.Patton@humboldt.edu)

**Fulfills the following requirements:** It satisfies the lower division "physical universe" (Area B) GE requirement. As stated in the HSU catalog, a goal of Area B is to teach you to recognize the importance of scientific methods as investigative tools. You are expected to work some numerical problems on exams and homework and should have an introductory algebra (high school Algebra I) background.

### **Course Description:**

Understanding and preparing for earthquakes. Causes and effects of earth tremors; mechanics of earthquakes; how quakes are located and measured; earthquake risk and hazards; earthquake potential in California; earthquake prediction. Not intended for geology majors. May require 1-day weekend field trip.

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### Humboldt State University Student Learning Outcomes:

HSU graduates will be able to:

- Apply scientific concepts and theories to develop scientific explanations of natural phenomena
- Critically evaluate conclusions drawn from a particular set of observations or experiments
- Demonstrate an understanding of the science field under study through proper use of the technical/scientific language, and the development, interpretation, and application of concepts

### Course Learning Outcomes

Upon successful completion of this course, you will be able to:

- Explain the dynamic tectonic processes of the Earth and relate them to physical phenomenon such as earthquakes, tsunamis and volcanoes
- Estimate earthquake size and location based on seismological and fault parameters
- Evaluate information ranging from media to technical sources to make informed decisions regarding hazards
- Assess the likelihood of a natural hazard in your personal situation and create a preparedness plan for home and work

### Grading

**Late Assignments are NOT ACCEPTED.**

**There are NO EXTRA CREDIT opportunities.**

Your final grade will be comprised of:

<u>Summary</u>	<u>Points</u>
Participation	100
Ten Activities (20 points each)	200
Research Paper	50
Video	50
Quizzes	100
2 Mid Terms (150 points each)	300
<u>1 Final Exam</u>	<u>200</u>
<b>Total</b>	<b>1000</b>

There are 1000 points available and grades are assigned by the percentage of total points as follows:

1000-940=A    939-900=A-    899-870=B+    869-830=B    829-800=B-  
799-770=C+    769-700=C    699-670=D+    669-600=D    <599=F

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### **Communication:**

The instructor will send announcements via email to the student's humboldt.edu email addresses. Please contact the instructor only via the email listed above. The instructor will respond at their earliest convenience. Students will exchange contact information with their peers on the first day of classes. This is important so that if anyone misses a class, they can contact more than one of their peers to go over the notes and lab materials. Also, students will need to interact during the online portion of this course and having other student's email addresses will facilitate this.

### **Classroom Conduct:**

Side conversations among classmates are disrespectful and disruptive to the instructor and your fellow students. Questions or comments about the course material are welcome at all times but should be approached in a respectful manner.

### **Electronic and Smart Devices:**

The use of cell phones, iPods, or other items that may distract you, your instructor, or your classmates are not permitted during class. All such devices must be turned off. Failure to comply is grounds for removal from classroom, a failed grade, or disciplinary action.

### **Name changes, gender identity and pronouns:**

If the name or gender on your HSU email account or Moodle name is different than the one you are and are called by, please tell me.

### **Academic Honesty:**

You are encouraged to work together to review notes from lectures, to work on problems from the text, and to formulate ideas for any take-home assignments. However, all work you turn in must be your own independent, original work. In the event that any work is copied from another student, zero credit will be given to all students involved (regardless of who copied from whom).

Any sources of information used in your written work must be referenced (regardless of whether the material was copied word-for-word). This includes your text book and all internet sources (reference these by including the name and URL). Any work including un-referenced material from another source (regardless of whether it was copied word-for-word) will be given zero credit.

More information is available at:

[http://www.humboldt.edu/studentrights/academic\\_honesty.php](http://www.humboldt.edu/studentrights/academic_honesty.php)

**Academic Misconduct:** Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the

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procedures and sanctions proscribed by Humboldt State University. Students caught plagiarizing or cheating on exams will receive an “F” in the course.

### University Policies:

Student Code of Conduct: Students are responsible for following the standards described in the Student Code of Conduct.

[https://www2.humboldt.edu/studentrights/sites/default/files/images/code\\_of\\_conduct.pdf](https://www2.humboldt.edu/studentrights/sites/default/files/images/code_of_conduct.pdf)

Students with Disabilities: Persons who wish to request disability-related accommodations should contact the Student Disability Resource Center in the Learning Commons, Lower Library, 826-4678 (voice) or 826-5392 (TDD). Some accommodations may take up to several weeks to arrange. <http://www.humboldt.edu/disability/>

Add/Drop policy: Students are responsible for knowing the University policy, procedures, and schedule for dropping or adding classes. <http://www.humboldt.edu/~reg/regulations/schedadjust.html>

Emergency evacuation: Please review the evacuation plan for the classroom (posted on the orange signs), and review [http://www.humboldt.edu/emergencymgmtprogram/evacuation\\_procedures.php](http://www.humboldt.edu/emergencymgmtprogram/evacuation_procedures.php) for information on campus Emergency Procedures. During an emergency, information can be found campus conditions at: **826-INFO** or [www.humboldt.edu/emergency](http://www.humboldt.edu/emergency)

Academic honesty: Students are responsible for knowing policy regarding academic honesty: [http://www.humboldt.edu/studentrights/academic\\_honesty.php](http://www.humboldt.edu/studentrights/academic_honesty.php)

*Academic dishonesty is willful and intentional fraud and deception to improve a grade or obtain course credit. It includes all student behavior intended to gain unearned academic advantage by fraudulent and/or deceptive means.*

Attendance and disruptive behavior: Students are responsible for knowing policy regarding attendance and disruptive behavior: [http://www.humboldt.edu/studentrights/attendance\\_behavior.php](http://www.humboldt.edu/studentrights/attendance_behavior.php)

Additional University Policies: See the link below for the official University policies on a) academic honesty, b) attendance and disruptive behavior, c) complaints against HSU employees, d) student code of conduct, e) animals in classrooms, f) adding/dropping classes, g) campus emergency procedures, h) counseling and psychological services, i) student disabilities resource center, j) financial aid office, k) academic and career advising center. <http://www2.humboldt.edu/academicprograms/syllabus-addendum-campus-resources-policies>

**\* Please note that this document is informational and subject to change.**

# Earthquake Country

## GEOL 106 Course Schedule

### Lecture

<u>Week</u>		<u>Date</u>	<u>Subject Material</u>	<u>Reading (pages)</u>	<u>Activity</u>
1	M	1/17/2017	Natural Hazards, Scientific Method, Energy	13-18	Scientific Method
	W	1/19/2017	Origin of the Earth, Earth Structure, Plate Tectonics	19-30	
2	M	1/24/2017	Plate Tectonics	Suppl. Reading	Earthquake Location
	W	1/26/2017	Plate Motion		
3	M	1/31/2017	Seismology, Magnitude, Intensity	31-48	Fault Types
	W	2/2/2017	Types of Faults, Plate Boundaries		Plate Tectonics
4	M	2/7/2017	Great Earthquakes	49-68	Earthquake Magnitude
	W	2/9/2017	Great Earthquakes cont.		
5	M	2/14/2017	Geophysical Evidence for Great Earthquakes	69-78	
	W	2/16/2017	Geologic Evidence for Great Earthquakes, preview Mid Term I	79-94	
6	M	2/21/2017	<b>Mid Term I</b>		
	W	2/23/2017	Review Mid Term #1, Crustal Earthquakes	95-110	
7	M	2/28/2017	Crustal Earthquakes cont.		
	W	3/2/2017	Crustal Earthquakes cont.		
8	M	3/7/2017	Damage from Earthquakes	111-128	Earthquake Damage
	W	3/9/2017	Damage from Earthquakes cont.		
NA	M	3/14/2017	Tsunamis	129-15	Tsunami A
	W	3/16/2017	Tsunamis cont.		Tsunami B
9	M	3/21/2017	Tsunamis cont.		
	W	3/23/2017	Earthquake Prediction	153-164	
10	M	3/28/2017	Earthquake Prediction cont.		Earthquake Recurrence
	W	3/30/2017	Preparing for Earthquakes	165-172	
11	M	4/4/2017	Preparing for Earthquakes cont.		
	W	4/6/2017	Volcanoes	Suppl. Reading	Volcanoes
12	M	4/11/2017	Volcanoes cont.		
	W	4/13/2017	Volcanoes cont., preview mid term II		
13	M	4/18/2017	<b>Online Mid Term II</b>		
	W	4/20/2017	*Online Activity: Cascadia subduction zone Video and Activity		
14	M	4/25/2017	Review Mid Term II, Floods	Suppl. Reading	Floods
	W	4/27/2017	Floods cont., <b>Videos Due!</b>		
15	M	5/2/2017	<b>Presentations</b>		
	W	5/4/2017	<b>Presentations and Final Preview</b>		
	T	5/9/2017	<b>FINAL</b>		
	T	5/9/2017	<b>RESEARCH PAPER DUE</b>		

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Course Expectations

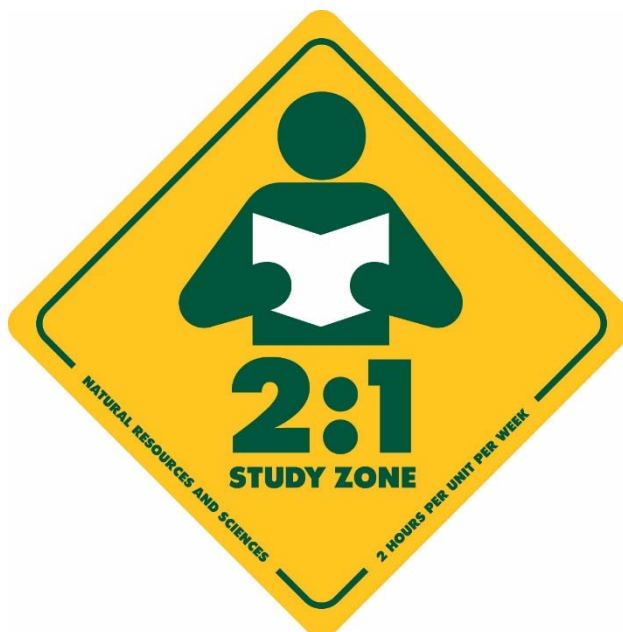
Time Commitment: Class will start on time at 15:00. You are responsible to be present for and be attentive to all the material covered in class. If you need to leave the class early, please let me know before the class starts. Lateness is unprofessional and chronic lateness is unacceptable. Rare lateness to class is completely understandable, but chronic lateness will result in a reduced attendance and participation grade.

This is a college-level science class, and will require a commitment of your time outside of class. This at-home time will enable you to digest the material we cover in class and help when you are asked on the exams to apply these concepts to different problems and applications. Successful students adopt a regular schedule of these at-home studies.

You will spend 6 hours per week on course material outside of class. You are encouraged to set aside a specific time each week outside of class devoted solely to each course:

- Reviewing lecture notes and in-class exercises each week
- Reading the textbook
- Working on the recommended exercises from the textbook
- Studying for exams

Note that 6 hours per week at home is the average minimum to pass. Some students may require more time at home just to pass; for some in this course that may be enough to get an A. A student who is very attentive in class, asks questions, and takes careful notes will need less at-home time.



You need to attend lectures and participate in class discussions. Much of the course material will only be presented in lecture, and quizzes and the final exam will be based on lecture material. Last minute changes in lecture topics, reading assignments or other requirements may. If you miss a lecture, it is your responsibility to get the missed material and to find out about any assignments from a classmate. It is your responsibility to communicate to me if you are having a problem with class material. I am available during office hours and by apportionment. You will also be working on group hazards projects in class. Missing class may not only affect your grade, but that of others in the class.

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Absences: It is extremely difficult to do well in this class without attending all the lectures. I understand there will be an occasional absence due to illness or emergency, however I consider more than two to three absences per semester excessive. If you do miss a class:

1. Obtain the course material online (PowerPoint slides, extra reading, and handouts). The slides will include information about any homework or in-class exercises that were assigned. Most assignments and handouts referenced by the slides will be in your handouts.
2. Next, try to obtain a copy of lecture notes from a classmate since there are many things we cover that are not spelled out directly on the slides or handouts.
3. Read the required reading covering the material you missed.
4. After this, feel free to contact me by email with any questions.

Quizzes: These will be given at unannounced times, so it is good to attend all classes. ALWAYS have a Scantron handy! If you do not have one when you need one, you cannot get credit for the assignment. This is your notification.

Final grade active attendance boost: If your final course grade after rounding to the nearest whole number is within 1 point of a grade transition (C to C+, D to C, A- to A, etc.) I will give you the boost needed to obtain the higher grade if you have actively attended most classes and succeeded in many of the in-class pop quiz questions. More than 2-3 unexcused absences is considered excessive and will disqualify you from this opportunity. Conduct not in accordance with that outlined below will also prevent you from receiving this bonus.

Course Withdrawal. The University has strict policies on withdrawing from classes. You can drop this class with no fee and no permission up until the census date January 30. The course will not appear on your transcript. After that date, there are only two options to drop classes:

1. Serious and Compelling Reason: Examples – psychological problems, loss of childcare, job conflicts. Note: taking too many units or doing poorly in classes is not considered a valid reason to drop the class. You must provide written documentation. Deadline to drop with a “Serious and Compelling Reason” is April 6. A \$20 fee, and a grade of W will show up on your transcript. You will receive no units and there is no impact on your GPA. You cannot withdraw from more than 18 units of class over your undergraduate career at Humboldt.
2. Catastrophic withdrawal: Examples – serious illness, accident, death in the family, being called to military service. Requires formal documentation (doctor’s note, obituary, service notice etc.). Grade of W on your transcript, does not count in GPA. Can be granted at any time in the semester and does not count toward your 18 unit limit above.

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Incompletes are given only in extreme emergency situations. I require that incompletes be finished within a few weeks of the scheduled final unless you have an extraordinary situation. Don't ask me for an incomplete if you are not passing the course at the time. If you are having any difficulties meeting assignments, or with the material, please see me early on! We can usually work something out if you don't wait till the last minute.

Check your grades! Please keep all of your returned work for the duration of the term. I will post your grades on course Canvas page. If you don't understand how that number is determined, please see me right away and I will make corrections if you have documentation of what you really earned.

Computer skills: This class will require computer use outside of class. Activities involving the 4 skills listed below will be included throughout the semester. In addition, you will be expected to check Moodle and your email regularly for announcements.

1. Send and receive email from your CR Google email account.
2. Open a web browser, and access a web page if you are given the web address.
3. Access course material (handouts, slides, announcements, etc.).
4. Open Microsoft word (.doc or .docx), Microsoft Excel (.xls or .xlsx) and Adobe .pdf documents to read their contents.

Groups: This class will conduct some class work in groups. Students are encouraged to collaborate by collecting data, taking notes, and sharing these data and results. Some assignments will be turned in as a group and for some activities, students are required to turn in individual reports and assignments. See the notes about academic honesty in the Syllabus.

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Course Information and Assessment

Lectures: Lectures will consist of presentations and discussions led by the professor. There will also be additional reading material assigned during the semester that will be discussed during lectures. This material will be provided one week prior to the day that they are discussed in class.

Reading: In this syllabus I provide a list of required reading in the Clague text *At Risk: Earthquakes and Tsunamis on the West Coast* textbook for each week. The student is expected to **read the assignment before class**. This reading is essential to your comprehension of the material in this course and will be a key to your success. Periodically I will ask you questions from the reading at the beginning of class, before we have covered the material in lecture. These answers will count towards your activity grade for the day and can count towards the “active attendance grade boost” (see “course expectations”).

Mid-Term/Final Exams: The 2 midterms are worth 150 points each and final is worth 200 points. The exams are a mix of multiple choice, true/false, short answer, and essay questions based on the lectures, activities, homework, and course reading. Mid-term exams cover the material since the beginning of the course or the last exam, or whatever is most recent. The final is cumulative and is comprehensive of all subjects covered earlier in the course, in addition to the new material covered since the second mid-term. Use the mid-terms to study for the final as the material that people perform poorly on will be some of the material that we see again on the Final (this way, making mistakes on the mid-terms becomes a learning moment).

Missing an exam: All make-up exams must be arranged for in advance when possible. In the event of an emergency or sudden illness that prevents you from attending the exam, you must contact me as soon as possible and arrange a time for the exam to be completed before our next regular class time. If you miss an exam (and do not contact me to make it up) or if you arrange a makeup that you do not take, you will receive a zero for that exam.

Activities: Each week we will focus on a specific topic and we will use some of the class time to develop these themes. Some weeks will include activities. You may need to spend some time out of class completing the activities. There are 10 activities throughout the course, each worth 20 points. The activity due time will be announced when they are assigned (sometimes that day and sometimes at a future time).

Participation: Students will be given up to 100 points for participating in class. Full credit will be given if students attend regularly, ask and answer questions in class, and participate in class discussion. When students conduct in behavior that is not respectful (as outlined in the syllabus), they jeopardize their participation grade. The instructor will use clickers for this.

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Course Information and Assessment

Library Research: There is one library research assignment that is worth 50 points. The report will be typed in font size 12, double spaced, and turned in electronically by 5 PM, Dec. 13, 2016. The report will be 3-5 pages long (2 ½ pages does not count). The paper will include between 1 and 2 figures and 1 and 2 data plots or tables. Each table, plot, or figure needs to have a caption describing the table, plot, or figure. The filename needs to include the course number, the subject, and your last name, in the following format: GEOL106\_research\_paper\_lastname.docx (or \*.pdf). You will not receive a grade if the format is incorrect or if the paper is too short. The research topic needs to be related to subjects covered in class or covered in the reading material. Students must use at least three primary sources of information must be used as references for their research paper. See the section at the back of the book for some examples of usable references (see section “Want More Information?” beginning on page 173.). I have posted an example paper on the course website. Also, please take advantage of the University Writing Studio! Remember to start early and make an appointment. You may want to visit the Writing Studio several times at different stages while you write your paper. Don’t stress about this paper. This is not a writing course, so I won’t be grading your writing abilities. However, it needs to be written well enough that I can understand what you are intending to convey. For example, all paragraphs need good topic sentences!

<http://www2.humboldt.edu/learning/writing-studio>

Video: Students will prepare an educational video to be presented in class during the final week. Students will work in teams of about five students. The videos will be 4-6 minutes in length. The videos will be posted online, so ensure to document all material that is used (to ensure copyright laws are obeyed). References and credits at the end of the video do not count towards the required time length. Students will review others’ videos in class. The grade, worth 50 points, includes the video (students need to demonstrate they worked as a team, as evidenced in the credits), the presentation of the video in class, and the review of others’ videos in class. Videos must cover material that we discussed in class or read about in the readings. The purpose of each video is to teach the viewer some fundamental concept. Each video will be graded on the ability to learn from the video and on the ability to engage the viewer. Don’t forget to make your video engaging (e.g. fun!).

Electronic Presentations: All electronic presentations will be posted to the website for this course. Please use these presentations to review course material and to prepare for your exams and reports.

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