| Syllabus for: Introduction to Earthquakes and Geologic Hazards | |
|---|---|
| **Semester & Year:** | Spring 2014 |
| **Course ID and Section Number:** | GEOL 15 Section E5245 |
| **Number of Credits/Units:** | 3 |
| **Day/Time:**<br>**Location:** | MW 13:15 – 14:40<br>HU 125 |
| **Instructor's Name:** | Jason R. Patton |
| **Contact Information:** | Office location and hours: none<br>Phone: 707.407.0021<br>Email: Jason-Patton@redwoods.edu |

**Course Description (catalog description as described in course outline):**
An investigation of geologic and plate-tectonic processes and their relationships to faults, earthquake activity, mountain building, volcanism, landform development, and natural disasters. The course explores plate interactions and the connection to historic geologic disasters including earthquakes, tsunami, and volcanic eruptions. Students will learn about hazard prediction, preparedness, and societal responses to living within a dynamic geologic environment.

**Student Learning Outcomes (as described in course outline) :**
1. Apply the scientific method and scientific reasoning to critically evaluate geologic phenomena.
2. Communicate the basic elements of plate tectonic theory and apply these concepts in describing how earthquakes, or other geologic hazards, impact both humanity and the natural environment.
3. Apply physical science principles to describe how energy is transmitted through geologic systems.

**Special accommodations:** College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodations document to me as promptly as possible so that necessary arrangements can be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services.

**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 procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

The student code of conduct is available on the College of the Redwoods website at: http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and

| |
|---|
| administrative procedures is located in the college catalog and on the College of the Redwoods homepage. |
| College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities. |

# GEOL 15
# Course Syllabus
# Introduction to Earthquakes and Geologic Hazards (3 units)

Spring 2014 Section E5245
M&W 1:15-2:40PM Room HM HU125

**Instructor**: Jason Robert Patton **email**: jason-patton@redwoods.edu

**Required Text:** Robert Yeats, Living with Earthquakes in California, 1st ed., 2001
**Required Supplies:** three ring binder for class handouts including blank paper for drawing illustrations and notes during class; colored pencils for making illustrations

Contact: Please don't hesitate to email me with any questions, comments, or concerns. I welcome any feedback or suggestions. Please do not use myCr messaging to get in contact with me. The best way to contact me for any reason is by sending an email directly to my College of the Redwoods email jason-patton@redwoods.edu

## Course Description

An investigation of geologic and plate-tectonic processes and their relationships to faults, earthquake activity, mountain building, volcanism, landform development, and natural disasters. The course explores plate interactions and the connection to historic geologic disasters including earthquakes, tsunami, and volcanic eruptions. Students will learn about hazard prediction, preparedness, and societal responses to living within a dynamic geologic environment.

## Course Learning Outcomes

1. Apply the scientific method and scientific reasoning to critically evaluate geologic phenomena.
2. Communicate the basic elements of plate tectonic theory and apply these concepts in describing how earthquakes, or other geologic hazards, impact both humanity and the natural environment.
3. Apply physical science principles to describe how energy is transmitted through geologic systems.

## 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.

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.

You may not leave the room during an exam or quiz unless you are ready to turn in your finished exam.

# GEOL 15
# Course Syllabus
# Introduction to Earthquakes and Geologic Hazards (3 units)

Spring 2014 Section E5245
M&W 1:15-2:40PM Room HM HU125

## Grading

Your final grade will be comprised of:

| Summary | Points |
|---|---|
| Course Notes and Illustrations | 50 |
| Earthquake Reports (2) | 50 |
| Activities (10-1) | 100 |
| Oral Presentation | 100 |
| Peer Review of Presentation (2) | 50 |
| Participation | 50 |
| Quizzes (10) | 100 |
| Mid Term (2) | 400 |
| Final Exam | 100 |
| Total | 1000 |

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

## 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.

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 procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an “F” in the course.

# GEOL 15
# Course Syllabus
# Introduction to Earthquakes and Geologic Hazards (3 units)

Spring 2014 Section E5245
M&W 1:15-2:40PM Room HM HU125

Academic dishonesty in any form may be reported to the vice president of CR, as per the student code of conduct available at http://www.redwoods.edu/District/Board/New/Chapter5/Ap5500.pdf See in particular page 9, Article VIII which begins "Students are expected to demonstrate qualities of morality, integrity, honesty, civility, honor, and respect."

College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

**Tentative Class Schedule***

| Date | Topic | Readings |
|---|---|---|
| Week 1 | Lecture 1: **Martin Luther King Jr. Day** | |
| | Lecture 2: Scientific Method, Energy, Force | |
| Week 2 | Lecture 3: Earthquakes: Sliding Brick Model, Stress and Strain | CH-1 |
| | Elastic Rebound Activity (1) | |
| | Lecture 4: Earth and Time, Earth Structure, Plate Tectonics | CH-2 |
| Week 3 | Lecture 5: Plate Tectonics, Plate Interactions | CH-3 |
| | Plate Motions Activity (2) | |
| | Lecture 6: Types of Faults, Association of Faults with Plate Boundaries, San Andreas fault | CH-4 |
| | Plate Motions Activity cont. (Bonus) | |
| Week 4 | Lecture 7: Types of Faults, Association of Faults with Plate Boundaries, San Andreas fault, cont. | CH-9 |
| | Fault Block Diagrams Activity (3) | |
| | Lecture 8: Seismic Waves, Ground Shaking | |
| Week 5 | Lecture 9: **President's Day** | |
| | Lecture 10: Seismology, Earthquake Location | CH-7 |
| | Earthquake Location Activity (4) | |
| Week 6 | Lecture 11: Earthquake Size (Magnitude) | |
| | Earthquake Magnitude Activity (5) | |
| | Lecture 12: Earthquake Models, Slow Earthquakes, Earthquake Cycles, Creep; Study Guide Mid Term #1 | CH-8 |

# GEOL 15
# Course Syllabus
# Introduction to Earthquakes and Geologic Hazards (3 units)

Spring 2014 Section E5245
M&W 1:15-2:40PM Room HM HU125

| | | |
|---|---|---|
| Week 7 | Lecture 13: **Mid Term #1** | |
| | Lecture 14: Review Mid Term #1 | |
| Week 8 | Lecture 15: Focal Mechanisms and Moment Tensors | HØ |
| | Focal Mechanism Activity (6) | |
| | Lecture 16: Focal Mechanisms and Northern CA Tectonics | |
| **SPRING BREAK** | | |
| Week 9 | Lecture 17: Paleoseismology | |
| | Paleoseismology Activity (7) | |
| | Lecture 18: Field Trip to Hookton Slough | |
| | Field Trip Activity (8) | |
| Week 10 | Lecture 19: Geodesy | |
| | Geodesy Activity (9) | |
| | Lecture 20: Geodesy cont. | |
| Week 11 | Lecture 21: Study Guide Mid Term #2 | |
| | Lecture 22: **Mid Term # 2** | |
| Week 12 | Lecture 23: Review Mid Term #2 Tsunamis | CH-10 |
| | Lecture 24: Tsunamis cont. | |
| | Tsunami Activity (10) | |
| Week 13 | Lecture 25: Volcano! and Volcanic Hazards | |
| | Lecture 26: Flood! | |
| | Flood Hazard Activity (11) | |
| Week 14 | Lecture 27: Presentations | |
| | Lecture 28: **no class** | |
| Week 15 | Lecture 29: Presentations | |
| | Lecture 30: Final Study Guide; Presentations | |
| Week 16 | FINALS WEEK, **Final** | |

*** Note: Instructor reserves the right to make changes to course schedule as deemed necessary.**

# GEOL 15
# Course Syllabus
# Introduction to Earthquakes and Geologic Hazards (3 units)

Spring 2014 Section E5245
M&W 1:15-2:40PM Room HM HU125

**College of the Redwoods Resources and Information**

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

**College of the Redwoods Eureka Campus**
**Introduction to Earthquakes and Geologic Hazards**
**Course Information and Assessment**

Mid-Term/Final Exams (500):

The 2 midterms are worth 200 points each, the final is worth 100 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 will focus on the "big picture" view that is comprehensive of all subjects covered earlier in the course, in addition to the new material covered since the second mid-term.

Missing an exam: All make-up exams should 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.

Course Notes and Illustrations (50):

Each lecture may include handouts (of the presentation for that day) and several on-board illustrations that relate to the specific topic being discussed for that day. You can use the handouts to take notes and your notebook to copy and label any illustrations. You are **required** to have a three-ring binder containing these handouts and your notes taken during every class. You will turn in your notebooks near the end of the semester along with your activities and homework that has been completed through the semester. Credit is given for careful reproduction of the illustrations including any notes, labels, and graphs.

Earthquake Reports (50):

The student will prepare a report for the earthquakes that occurred in some region over some limited period of time. The spatio-temporal limits to the presentation is up to the student. This report will be presented before the class and will include several PowerPoint slides. Two reports are required for 25 points credit each.

Activities (100):

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 30 points and they are due by the beginning of the following class.

Final Project Presentation (100):

Presentations should be done in the style of a professional/conference presentation, including appropriate visuals (posters, slides, overheads or computer projection). Presentations will be announced and open to the CR community. You should plan to

speak for 10 to 12 minutes followed by 3 to 5 minutes of question and answer from the class or others in attendance.

Presentation Review (50):

Students will review two student final presentations (25 points each). These reviews will be summarized on the review sheet provided by the discussion leader. These are intended to be constructive criticism for the discussion leader. There is also space to provide a paragraph summary of the presentation. Students who take good notes during our presentation will have material with which to base their review.

Participation (50):

Meaningful involvement in class discussions is the primary component of the participation grade. Although it would be desirable for all students to actively participate in every class session, this is not always feasible. In rough terms, you will receive points for each class session your participation meets the standard of meaningful involvement. Thus, for full credit, you will need to actively participate in at least 20 class sessions. Of course, if you are normally present and participating in class you will receive full credit for participation without having to worry about it!

Quizzes (100):

There will be ten quizzes. These will be online and be open books, open notes. The due date will be announced in class and this due date is a hard due date. Please attend class to ensure you do not miss a quiz announcement.

Reading: In this syllabus I provide a list of required reading in the Yeats 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 below).

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

**College of the Redwoods Eureka Campus**
**Introduction to Earthquakes and Geologic Hazards**
**Course Expectations**

Class will start on time at 1:15 PM. 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.

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.

You will spend 6 to 9 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
- Completing experiment write-ups and homework assignments
- 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.

Absences: It is 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.

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.

**College of the Redwoods Eureka Campus**
**Introduction to Earthquakes and Geologic Hazards**
**Course Expectations**

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.

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 myCR regularly for announcements. If any of the items listed below seem foreign to you, you are encouraged to sign up this semester for CIS 100 "Basic Computer Skills", a beginning computer literacy course at CR.

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.

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