GEO-3030: LIVING WITH EARTHQUAKES AND VOLCANOES

a UOnline course, 3 credits, no prerequisites, satisfies UU International Requirement and UU Science Foundation Requirement

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This course, *Living with Earthquakes and Volcanoes*, explores two of Earth’s most spectacular phenomena from a variety of perspectives: physical sciences (basic and applied), social sciences, and engineering. To understand where and why earthquakes and volcanic eruptions occur, we use the geological concepts of plate tectonics, deep time, and the persistence of processes and principles. Earthquakes and volcanic eruptions are a global concern, requiring collaborative international prediction programs and remediation responses; this course is intended to increase individual awareness of these international implications and attendant responsibilities. The global patterns of earthquakes and volcanic eruptions place particular burdens on a few countries (e.g., Japan, Indonesia, China), but many countries need to find their own answers to the same question: How do local constraints (culture, infrastructure, government, economics) affect the feasibility of applying scientific and engineering solutions to hazard reduction?

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**TA/Grader:** Matthew Miller

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Office Hours: By appointment (please contact the TA/Grader through email if you have any technical issue with Canvas).

**Textbook:**
The primary readings for this course are the course web pages, all online. The course does not use paper-based texts. The text was originally created by Dr. Richard Jarrard ("Living with Earthquakes" & "Living with Volcanoes") and has been updated by others, including Dr. Erich U. Petersen, Mike Davis, Lowell Miyagi, and Fan-Chi Lin.

**Course structure:**

The course consists of 15 weekly modules. A typical module includes about 15 online pages of text and figures, a short online quiz, and one or more slideshows. Many of the modules have an associated homework assignment. The modules are:

- Introduction and Overview
- A Multiple Perspectives Approach to Earthquakes and Volcanoes
- Minerals, Rocks, and Deep Time
- Dynamic Earth: Plate Tectonics
- Volcanism: Kinds of Eruptions
- Volcanoes: Where and Why?
- Living with Volcanoes
- Review and Exam #1
- Stress, Strain, and Seismic Waves
- Earthquakes: Where and Why?
- Earthquakes and People: Earthquake Hazards
- Living with Earthquakes: Some Examples
- Earthquake Prediction: 3 Countries, 3 Approaches
- Tsunami: Multinational Impact and Response
- Review and Exam #2

Everything you see within these modules, including every link, is required unless it is labeled as "optional". Each weekly module contains an optional link to a PDF file containing the same material as in the online chapter, but in a printer-friendly version.

Enter the list of 15 modules either by clicking the 'Modules' tab along the left margin or 'Modules List' link on the 'Home page' tab. The schedule of due dates is given within each individual module, in the course’s Calendar tool (red bar above), and on the bottom of this Syllabus. Due dates are ending dates, both quizzes and homework assignments are open for seven days. I strongly encourage you to submit before the due date, to leave contingency time in case of issues. No "make-up" quizzes are available.

Because this class is 3 credit hours, students are expected to devote about 9 hours per week to it. In a typical week, you might spend 3 hours on the module readings, 1 hour on the homework assignment, 30 minutes on slideshows, 20 minutes on the quiz, 10 minutes on Discussions messages, and 1-3 hours reviewing what you've learned (perhaps via the downloadable notes or downloaded module text).

**Quizzes:**
Almost every module has an associated quiz. Quizzes are short (5-12 multiple-choice questions) and brief (20 minute maximum). I recommend that you take each quiz right after you have read that module. The quizzes have two purposes: to encourage you to keep up on your module readings, and to familiarize you with the kinds of questions that you are likely to encounter on the exams.

To take a quiz, click the quiz link within that week's module, then click 'Take the Quiz'. Each quiz is only available to be taken during the period Saturday 12 AM to Friday 11 PM (MST) of the week for that weekly module (reminders of this quiz period are posted within each module's home page, in Calendar, and as an announcement when you login to CANVAS). Each quiz 'time-window' is rigid, because CANVAS does not allow us to re-open a quiz for one person without opening it for everyone. If you do miss one quiz or do poorly on one quiz, don't worry: each quiz is worth about 1% of your final grade. Take every weekly quiz, to establish a pattern of steady point progress; almost nobody who consistently skips the quizzes does well in this course. I recommend that you do not wait until the last available minutes to take a quiz, in case you encounter technical problems such as a dropped connection. The "20-minute maximum" is an absolute cutoff, so be sure to submit before then. There are no "make-up" quizzes. To maximize your cumulative points consider taking the quiz even if you have not completed the reading.

Quiz are graded immediately and your score is available in 'Grades'. On Saturday morning following the close of a quiz, I 'reopen' the quiz so that you may see which questions you may have missed. If you did not take the quiz you will not be able to 'reopen' the quiz.

Homework assignments:

I recommend that you print this section on homeworks, so you can refer to it easily while you are doing your first homework assignment.

Homework assignments are short (often <1 hour) but abundant, and they are 35% of the total course grade. At least seven of the 15 weekly modules include a homework assignment, usually in the form of two adjacent links. The first is a 1-3 pages PDF document, which will open when you click the link. Print this homework assignment page(s).

Do each homework assignment offline, using a pencil and your paper copy to answer questions. This is your personal copy, not to be turned in. To submit your homework assignment, go back into this week's module and click on the next 'Homework' link, which will have a name like 'Submit Module # Homework'. Then answer the questions, which will be almost but not exactly the same as those on your homework; slight differences are just for automatic computer grading. A small amount of variation in numerical answers is provided in the automatic computer grading. However, you must strive to be as accurate and precise as possible in working out all calculations.

Every homework assignment is due at 11 PM on the Tuesday after that module ends; you can see that "due date" either next to the 'Submit Module # Homework' link or on your course Calendar (top of course page). After 11 PM on Tuesday each homework closes, and the link is no longer operable. I am not happy about the rigidity of this late-homework process, but it is forced on us by the CANVAS Assignments tool; An assignment (homework or quiz) cannot be re-opened for one student without re-opening it for everyone.

If exceptional circumstances prevent you from submitting your homework by the 11 PM Tuesday cut-off deadline, use the People tool "To Fan-Chi Lin" to send both your excuse and your late homework answers to me, ASAP! If I agree that your late homework assignment should be graded, I will do so by hand and enter the grade into your grade sheet.

Homework assignments must be submitted individually, and not as a team. Feel free to work together, but make sure everyone contributes. It will be painfully obvious on exams if you only copied someone's
homework. Copied homework assignments, and the one from which they were copied, will receive zero credit.

Two homework assignments are based on 50-minute videos that can be viewed by clicking on the 'movie for homework' link within the weekly module. In case technical problems make it impossible for you to view the video, a backup homework assignment has been provided (as a downloadable PDF in the module plus its submission link). Do either the video or backup homework assignment, not both.

Homework assignments are graded immediately and your score is available in 'Grades'. On Wednesday morning following the close of a homework assignment, I reopen the assignment so that you may see which questions you may have missed.

Exams:

The two exams (Midterm and Final) total 55% of the total course grade. Both exams are given entirely on Canvas and are primarily “short answer” questions. The first exam may be taken on any day Saturday - Friday, October 13 - October 19. This Midterm covers topics discussed during the first 7 weeks (the first 7 modules). The final exam may be taken on any day, Thursday - Wednesday, December 6 - December 12. The Final exam is comprehensive, but it concentrates on material covered during the second half of the course (about one-third modules 1-7 and two-thirds modules 9-15). Also, the exams will have a very stringent ‘time window’ (the same as the quizzes, only longer: 60 minutes for the midterm and 120 minutes for the final) so be sure you have scheduled distraction/disruption free time for yourself to take the exam. I STRONGLY recommend that you do not wait to the last minute to take your exams, primarily for you to avoid technical or other difficulties.

Both exams are closed-book; no notes, recorders, headphones, calculators, talking, looking at a neighbor's answers, or getting someone else to do the problems for you. No cheating! I have secret ways of catching cheaters (for example, it is painfully obvious if you have “googled” your answer; also, you will run out of time), and I am not charitable to them.

If you cannot take the exams because of last-minute medical or outside-job reasons, you may be allowed to take a makeup exam, but only under extreme circumstances [You MUST contact me (Fan-Chi Lin via 'People' or 'Inbox' links (not phone)) before the exam and obtain approval to take the makeup]. Makeup exams are given by arrangement. Exam grades may be available as early as the Thursday following exam week (in 'Grades' link). You may make an appointment to discuss your exam and ask questions.

Grading:

The course grade is based on weighted percentages of exams, homeworks, and quizzes, as follows:

1. Quizzes 10%
2. Homework 35%
3. Midterm Exam 25%
4. Final Exam 30%
Final marks will be awarded based on the final percentage (calculated from the weightings above) converted to a letter grade according to the following straight scale:

>90% (A, A), 80-90% (B, B+, B), 70-80% (C, C+, C), 60-70% (D, D+, D), <60% (E).

While I don’t curve grades, I do adjust grades based on student performance. For example, if the high score on an exam is 95, then I scale all of the grades based on this score. You can check on your progress to date at any time by looking in the ‘Grades’ tab. Interpretation of “Total Course Percentage” in grade display (a caution): Early in the semester the percentages may sway drastically from week to week because both individual high and low grades strongly affect the average (in opposite directions). As more points are accumulated during the semester, the closer the values approximate your likely eventual course percentage grade.

**Tips for success in this class:**

Because this class is 3 credit hours, students are expected to devote about 9 hours per week to it. In a typical week, you might spend 3 hours on the module readings, 1 hour on the homework assignments, 30 minutes on slideshows, 20 minutes on the quiz, 10 minutes on Discussions messages, and 1-3 hours reviewing what you've learned (perhaps via the downloadable notes or downloaded module text). The first week is light on module readings and other work, because of the temporary work load of learning CANVAS and the online course structure.

Online courses make different demands on the student than do lecture courses. Surveys of students have shown that the two best predictors of student success in online courses are self-motivation and time management. These two skills are even more important in online courses than in lecture courses because verbal cues (nagging) by the instructor are lacking: “here is this week’s homework assignment”; “don't forget, homework assignments are due tomorrow!”; “OK, let's start this class by taking the weekly quiz”. Time management is probably a key reason for you taking this course: you want the flexibility of setting your own schedule for when you work on it. Flexibility can be a pitfall, however, so do set a schedule for yourself, considering the two essential limiting conditions:

- The quiz for each weekly module must be taken between Saturday and 11 pm Friday, and you will want to read the module chapter and view the slideshows (at least) before taking the quiz. Nevertheless, it is to your advantage to take the quiz even if you have not completed the reading because you may earn a few points.

- The homework assignments for each weekly module should be turned in before 11 pm Friday, the close of the module week. It is strongly recommend that you avoid aggravation and frustration by doing the homework at least a day ahead of this. For example, if you have a question, it may take several hours for me or TA to respond, and lack of instructor response is not an excuse for failing to submit a homework on time. Also, there is a small chance of temporary server problems interfering with your downloading or turning in a homework.

- Take your time and methodically answer the questions on the quizzes and homework assignments - a slip of the mouse can be disastrous). Likewise take your time and methodically answer the mid-term exam and final exam questions - clearly filling in each answer choice in the correct location. The most common mistake (by far) that we have observed is changing your answer from your selection. Nevertheless, check over all your answers to see that every one has been correctly indicated.

The key to success in this course is persistence. About 6% of students are likely to fail this course or get a D, nearly always because they stopped trying (dropped out unofficially) and did not officially withdraw (please do so). It is strongly recommend that you submit every quiz and homework assignment, even if you
cannot do well on every one. For example, a student who gets an 'A' on 5 homework assignments and skips 2 homework assignments will receive a lower total homework score than a student who gets a 'B' on all 7 homework assignments. Even though a quiz is worth ~1% of your grade it may make a difference in borderline situations. Neither quizzes or homework assignments can be made up. Extra credit assignments are not available. Ultimately, the final grade is based on total points accumulated during the semester.

Online courses typically require substantial reading. Many students manage to pass lecture courses without doing the required readings, but that tactic is hopeless in an online course. If you hate to read, this course is not for you. Reading assignments have been shaved to the bone: the online chapter modules are the only reading, and there is no paper-based textbook.

**ADA:**

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

**Student responsibilities:**

All students are expected to maintain professional behavior in the online classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible student behaviors, and I will do so, beginning with warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

**Accommodations Policy:**

Some of the course module writings in this course may include material that conflicts with the core beliefs of some students. Please review the syllabus carefully to see if the course is one that you are committed to taking. If you have a concern, please discuss it with me at your earliest convenience.