Preliminary Syllabus
Earthquake and Volcanoes – 01:460:201:92 || Fall 2020

Instructor: Dr. Roy W. Schlische
Dept. of Earth and Planetary Sciences
Email: schlisch@eps.rutgers.edu
Students may request private virtual office hours from TBA pm until TBA pm on Sundays through Thursdays.
Open virtual office hours via web conference are Mondays before quiz days (TBA) and the Wednesdays before homework projects are due (TBA).


1973, Eldfell volcano, Heimaey, Iceland

Summary of Course Format

This course and all its sections are fully online ("by arrangement"); thus, the class does not meet as a group on a specified day/time. You have lots of flexibility in when you view the course materials and do the readings. For the weekly quizzes, you may start the quiz at you time during a 24-hour period, but you must complete it prior to the specified deadline. The quizzes are also timed: once you start a quiz, you have up to 30 minutes to complete it. The four homework assignments have due dates and times as specified in the schedule below and in the calendar within Canvas. You will interact with your peers and the instructor by posting questions to a discussion board in Canvas; the questions should be related to course materials; the instructor will answer these questions in a timely manner. You may also request a time for a web conference with the instructor.

Technological Requirements:

1. Computer with 2. PowerPoint, 3. Word, 4. Adobe Acrobat Reader, and 5. an internet browser like Firefox; 6. broad-band internet connection. For virtual office hours: 7. web-conferencing software (TBD), 8. microphone, 9. webcam (optional) or 10. smartphone (the latter is a good back-up for taking quizzes, reviewing course materials, etc.; be sure to install 11. the mobile version of Canvas on your phone).

Course Webpage:

All course materials, including the quizzes, are accessible through the Canvas learning management system (https://canvas.rutgers.edu/). Access the course site from a computer, smartphone, or pad; be sure to download and install the Canvas app for the latter two devices.

SAS Core Curriculum Goals for Natural Sciences (NS):

By the end of the course, *STUDENTS WILL BE ABLE TO:*

- Understand and apply basic principles and concepts in earth science.
- Explain and be able to assess the relationship among assumptions, method, evidence, arguments, and theory in scientific analysis.

No prerequisites: The course is accessible to a wide range of students.

Course Learning Goals:

This course will survey basic knowledge about earthquakes and volcanic eruptions as well as how these natural processes affect human civilization. Some very general objectives, not necessarily in the order of their importance, are:

- Learn about the hazards earthquakes and volcanoes pose to human civilization, and ways we can mitigate them.
- Learn basic facts about volcanoes, earthquakes, and their connection to large-scale processes within the Earth (plate tectonics and heat convection in Earth's interior).

- Develop a basic familiarity with the modern understanding of how our planet functions.

Besides the specific objectives above, you will become familiar with the broad concepts of scientific inquiry:

- what constitutes knowledge,
- how it is acquired,
- how it is verified,
- how it is applied.

Departmental Learning Goals for Survey Courses

Students taking this course should develop an appreciation of critical thinking and the scientific method, including hypothesis testing. Students should recognize the importance of Earth Sciences in understanding of the physical, social, and economic resources and history of our planet. For example, we would expect that any student successfully completing our courses should be able to critically evaluate scientific issues in earth systems discussed in the popular press.

Reading & Viewing Assignments

All reading assignments are either publicly accessible web pages or documents posted on Canvas. The individual course modules will list the specific reading and viewing assignments. This is more work for me, but it saves you a lot of money. You are welcome!

Assessments of Learning and Basis for Grade:

- *Weekly Quizzes*: 55% of grade
  - 13 quizzes total
  - Drop two lowest quizzes.
  - Each quiz is worth 5% of course grade
- *Homework Projects*: 40% of course grade (4 projects, each worth 10% of grade)
- *Class Participation*: 5% of course grade: Post 5 questions related to course material on Discussion Board

Consult the Gradebook in Canvas for your scores and course grades. Letter grades correspond to the following numerical values: A, 90.0 to 100; B+, 85.0 to 89.99; B: 80.00 to 84.99; C+, 75.00 to 79.99; C, 70.00 to 74.99; D, 60.00 to 69.99; F, 0 to 59.99.

Quiz Format & Protocols:

Each quiz consists of ~15 mostly multiple-choice and true-false questions. Many quiz questions will refer to drawings, photographs, maps, etc. provided with the questions. You will use Canvas to complete the quiz. Quizzes become available at 12:01 am EDT/EST on every Tuesday. Quizzes are due by 11:59 pm EDT/EST every Tuesday. Once you start the quiz, you will have 30 minutes to complete the quiz (less time if started after 11:29 pm). I will drop the two lowest quizzes at the end of the semester.

You may consult any resource (including the course notes, readings, etc.) during the quiz, except another person. However, keep in mind that you will not have enough time to look up answers for each of the 15 questions. It is essential that you review all course materials before the quiz. Some students find it helpful to prepare a page of hand-written notes containing items that might be challenging to memorize.

Receiving help from another person during the quiz or providing help (including copying or photographing quiz questions) to a classmate is a breach of academic honesty.

Each question number has a bank of multiple questions. The order of the selected questions and the possible answers is random. Thus, each student receives a unique quiz. You will need to answer the questions in order (no going back). The order of the questions does not affect your ability to answer them. Do not leave any questions blank; there is no penalty for guessing; however, try to use educated guesses by eliminating choices that you are reasonably sure are incorrect.

Homework Format & Protocols

Homework assignments involve a series of exercises that will help you gain additional insights on the course material. You will need to write short sections as you answer specific questions, but there are no term papers. For example, you will need to characterize a volcano (unique to you), and find its location using Google Earth. Additional non-graded exercises are in the modules and/or readings.

Homework assignments are due by 11:59 pm EDT/EST on the dates indicated in the schedule / calendar. *[Note: Students may still submit late assignments, although these will receive deductions that increase exponentially with time after the deadline (-0.05% for first hour, -0.1% for second hour, etc.) up to a maximum of -25%. However, I will not accept tardy assignments after grades are released.]* You will upload Word, PowerPoint, or PDF files through the Assignment portal of Canvas. Specific directions will be in the homework modules. As with quizzes, you may consult any resource except another person. Copying all or part of a homework assignment is a breach of academic honesty. Early submission is encouraged.

In the event that you are unable to connect to the Rutgers Canvas site via broadband to submit a homework assignment, you may email the files directly to me. You may alternatively post the file to cloud storage site (like Box) and send the link(s) to the me. If a file transfer is not possible, you should photograph the homework with your smart phone and email those photos to me.

Class Participation Format and Protocols

You must post at least 5 (short, direct) questions to the Canvas discussion boards during the semester. I will grade up to 7 posts using the rubric below and drop the lowest two scores. Posts can include questions about course materials, readings, and videos as well as curiosity-based questions growing out of course topics. The range of question topics will be broad, but you *cannot* ask questions about course mechanics (i.e., information available in syllabus, homework instructions, etc.). You will receive some credit for each question posted provided it does not repeat a question already posted; therefore, it is important that students read previously posted questions (and answers). A review of questions and answers before the weekly quiz would be a useful procedure. For this reason, the discussion board will close to new student postings at TBA on days before quizzes. This deadline will allow me to answer the questions and students to review the questions and answers before the weekly quiz.

0-35%	35-70%	70-80%	80-90%	90-100%
No submission or repeat of prior submission; submission barely meets assignment criteria and contains numerous spelling and grammatical mistakes and does not use most nomenclature correctly; contains profanity or language that is not respectful	Partial repeat of previous submission; submission barely meets assignment criteria and contains several spelling and grammatical mistakes; does not use some nomenclature correctly	Submission meets assignment criteria and contains very few spelling and grammatical mistakes and uses most nomenclature correctly	Submission meets assignment criteria and demonstrates good to very good grasp of concepts; almost no spelling, grammatical, or nomenclatural errors	Submission meets assignment criteria and demonstrates good to very good grasp of concepts; no spelling, grammatical, and/or nomenclatural errors

Email Protocols

Using your Rutgers email account only (to prevent your messages ending up in my junk folder), email me to set up an appointment for web-conference-based office hours. For this entirely voluntary activity, provide at least three possible days/times. The instructor will respond to your email within 24 hours during the work-week. Requests received on Saturdays and Sundays may not receive a reply until Monday afternoon. If you have not received a reply within those time frames, feel free to gently remind the instructor of your previous request. The instructor generally replies to emails between 3 pm and midnight. Be sure to include the course number (460:201) in the subject heading and include your full name and RUID# in the "signature." You may address me as either Prof. Schlische or Dr. Schlische. Please proof-read your messages to minimize typos and grammatical errors, and

do not use internet abbreviations (e.g., lol) or emoticons. Note: I will only discuss scores and grades during private office hours.

Important Dates:

- Sept. 1: Start of semester
- Sept. 8: Syllabus quiz (use this to familiarize yourself with the process for taking quizzes)
- Sept. 14: Last day to drop the course without a W grade.
- Sept. 15: First of 13 weekly quizzes.
- Sept. 31: First of 4 homework assignments is due.
- Nov. 30: Last day to drop the course with a W grade.

Tentative Schedule

A "week" for this asynchronous remote course begins on Wednesdays and ends on Tuesdays.

#	Week	Topics	Assignments Due
01	09/02	Overview of course; review of useful skills; overview of Earth: plate tectonics; overview of Earth: internal structure	09/08: Syllabus quiz
02	09/09	Minerals—the building blocks of rocks; molten material at surface and below ground; types of igneous rocks	09/15: Quiz 1
03	09/16	What causes rocks to melt? How does magma crystallize? What exactly is a volcano? What are the different types of volcanoes?	09/22: Quiz 2
04	09/23	How do we classify volcanic eruptions? What comes out of volcanoes?	09/29: Quiz 3
05	09/30	What makes volcanoes erupt? Where do volcanoes form, and why?	09/31: **Hmwk 1;** 10/06: Quiz 4
06	10/07	What are the controls on types of volcanic eruptions? How have eruptions (Santorini, Vesuvius, Krakatau, Mt. Pell, Mt. St. Helens) affected humans?	10/13: Quiz 5
07	10/14	How do we monitor volcanoes? How do we assess volcanic hazards and risks? How do we mitigate against volcanic hazards?	10/20: Quiz 6
08	10/21	How do volcanoes impact climate and affect life on Earth? What do we know about deep-sea volcanoes and extraterrestrial volcanism? What volcanic activity took place in NJ?	10/22: **Hmwk 2**; 10/27: Quiz 7
09	10/28	Basics of earthquake science. History of ideas about earthquakes. How do we detect earthquakes?	11/03: Quiz 8
10	11/04	How do we locate and measure earthquakes? What are faults, and how do they behave during earthquakes?	11/10: Quiz 9
11	11/11	Where do earthquakes happen and why? What were some notable historic earthquakes?	11/12 **Hmwk 3**; 11/17 Quiz 10
12	11/18	How do we use earthquakes to learn about Earth's interior?	11/24: Quiz 11
13	11/25	What are the hazards and risks associated with earthquakes? How do we mitigate against them? What is status of earthquake forecasting & prediction?	12/01: Quiz 12
14	12/02	Case studies: 1906 San Francisco; 2004 Sumatra; 2005 Kashmir; 2008 Sichuan; 2010 Haiti; 2011 Tuhoku	12/03: **Hmwk 4**; 12/08: Quiz 13

How to Do Well in the Course

- If you are 1st-year student (Welcome!), spend a few minutes looking over the tutoria1on how to use Canvas. You can find it in the Students tab on the Canvas home page.
- Add the most important deadlines (quizzes and homework assignments) to your own calendar.
- Check the announcements and the Q&A on the Discussion Board regularly; set Canvas preferences to send you messages about new announcements and discussion board posts.
- Take the Syllabus Quiz to familiarize yourself with the format to be used on all or most quizzes.

- Begin your study of course materials well before the quizzes. Start with the course notes; then move on to the assigned readings and viewings.
- Make the most of review questions in some readings and PowerPoints by answering the questions without looking at your notes; then check the answers; if correct, you are in good shape; if incorrect, see if the correct answer makes more sense; if it does not, seek help.
- If you have questions about the course material or are curious about a topic, post a question on the Discussion Board, and get credit for class participation. Also, visit the group office-hours sessions, especially if you still have questions on the days before the quizzes will take place and the homework assignments are due.
- You have a 24-hour window to take the quiz. Choose a time when your internet connection is consistently good, distractions at home are minimal, and you are not tired. Listening to music is helpful for some students, but do turn the TV off. Do not multitask!!
- Begin homework assignments at least 10 days before the deadline. Proof the materials to correct any spelling or grammatical mis-steps.
- Keep the downloaded files organized so that you can readily find material needed for homework exercises.
- Regular exercise and 7 hours of sleep really are good for your physical and mental health.
- Check out the info at https://rlc.rutgers.edu/succeedonline .

Academic Integrity Policy

Summary: http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers/

Violations include: cheating, fabrication, plagiarism, denying others access to information or material, having someone else complete your course work, and facilitating violations of academic integrity by others.

Resources for students: http://academicintegrity.rutgers.edu/resources-for-students/

Acknowledgments

Prof. Michael Carr, a volcanologist, initially developed this course in the 1980s as the Department expanded its offerings of general-education courses. Prof. Vadim Levin, a seismologist, took over the course after Prof. Carr's retirement. Liran Li taught the course multiple times while getting the content moved exclusively to the Canvas platform. James Bourke developed a set of web-based readings for the earthquakes part of the course (please thank him for saving you money). Aaron Waters taught the course this summer and allowed me access to all the teaching materials. I am grateful for their help, but any errors are my own.

Are you considering a major or minor in Earth & Planetary Sciences or looking for another course??

The Department of Earth & Planetary Sciences offers 4 major options (Geological Sciences, Environmental Geology, Planetary Science, and General Option. We also offer a minor in Earth & Planetary Science and coordinate an interdisciplinary minor in Astrobiology. Finally, we offer numerous courses that satisfy the NS requirement.

- Information about introductory and survey courses>>
- Information about the 4 major options>>
- Information about the 2 minor options>>
- General information for prospective students from current students and alumni>>

Prof. Schlische's Biographical Sketch

I am originally from Bergen County, New Jersey, and a 1981 graduate of Wood-Ridge High School. I received a B.A. degree in Geology from Rutgers University – Newark in 1985 and attended geology field camp at the University of Nevada—Las Vegas. I earned a Ph.D. degree at Columbia University and then joined the Department of Geological Sciences at Rutgers University – New Brunswick as an assistant professor in 1990. I became an associate professor in 1996 and a professor in 2007, and currently serve as Undergraduate Program Director for the Department of Earth & Planetary Sciences. [If you have any concerns about this course or its instructor, you should discuss them with Department Chair Gregory Mountain (a great name for geologist, right?).

I have taught numerous courses at Rutgers including Introductory Geology, Planet Earth, and Oil & Gold—The Good, The Bad, The Ugly, and Field Geology. I have mentored 30 graduate students and advised 14 undergraduates for independent study and honors research projects. I am the author of 66 scientific articles and over 100 conference presentations; these have been cited in over 5000 publications. I study faults (movement on which cause earthquakes) in the field and laboratory, where my students and I use scaled down models to simulate how the Earth's crust fractures and warps. I have stood on the equator in Ecuador; experienced volcanic activity in Yellowstone, Iceland, Hawaii, and the Galapagos; and straddled a plate boundary along the San Andreas fault in California and the Reykjanes ridge in Iceland. I once found over 25 partial and whole *Semionotus* fish fossils. I have a pollen species (*Cycadopites schlischii*) named after me.

Student Wellness Services

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.
http://codu.co/cee05e

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901
http://health.rutgers.edu/medical-counseling-services/counseling/
CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offer a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901
www.vpva.rutgers.edu/
The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854
https://ods.rutgers.edu/
The Office of Disability Services works with students with a documented disability to determine the eligibility of reasonable accommodations, facilitates and coordinates those accommodations when applicable, and lastly engages with the Rutgers community at large to provide and connect students to appropriate resources.

Scarlet Listeners

(732) 247-5555
https://rutgers.campuslabs.com/engage/organization/scarletlisteners
Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Report a Concern: http://health.rutgers.edu/do-something-to-help/