

# Earthquakes and Volcanoes

01:460:201:91 Fall 2020

canvas.rutgers.edu



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**Office hours:** Virtual (Zoom) TBA

## Summary of Course Format

**Lectures:** This is an asynchronous ONLINE class. This means there will be no formal lectures, so you can learn about the course topics and work on assignments at your own pace. While there is flexibility, keeping up with the material is entirely your responsibility. See "**Modules**" tab on the left for course materials. The "**Course Home - Reading List**" outlines the suggested schedule with which you should be reading through the topics. Learning remotely presents new challenges. For assistance with learning how to address these challenges, please consult the resources available here:

[https://rlc.rutgers.edu/remote\\_instruction](https://rlc.rutgers.edu/remote_instruction)

## Technology Requirements

Please visit the [Rutgers Student Tech Guide](#) page for resources available to all students. If you do not have the appropriate technology for financial reasons, please email [Dean of Students](#) for assistance. If you are facing other financial hardships, please visit the [Office of Financial Aid](#). For office hours or appointments, I will be using [Zoom](#). Please go to this page to learn about and download the program.

For Class	For Office Hours
<ul style="list-style-type: none"><li>• Computer (tablet will probably work)</li><li>• PowerPoint</li><li>• Word</li><li>• PDF reader</li><li>• internet browser</li><li>• broad-band internet connection</li></ul>	<ul style="list-style-type: none"><li>• web-conferencing software (Zoom)</li><li>• microphone</li><li>• webcam (optional but highly recommended) smartphone (the latter is a good back-up for taking quizzes, reviewing course materials, etc.; and be sure to install the mobile version of Canvas on your phone)</li></ul>

## Course Webpage:

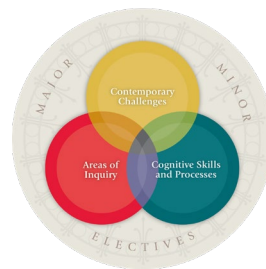
Canvas <https://canvas.rutgers.edu>

All course materials, text, announcements, syllabus, grade book, assignment submissions, etc. are on the Canvas website; we will not be using Sakai.

### 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



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

Along with 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.

**Required Texts:** How Volcanoes Work by Vic Camp

This is a **free online manual** and can be found at: [http://www.geology.sdsu.edu/how\\_volcanoes\\_work/](http://www.geology.sdsu.edu/how_volcanoes_work/)

No other physical texts will be used.

### 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. If you find a broken link, please let me know asap so I can fix it!

### Assessments of Learning and Basis for Grade (tentative)

Assignment I - Volcanoes: 12.5 %

Assignment II - Volcanoes: 12.5%

Volcanoes Exam: 25 %

Assignment III - Earthquakes: 12.5%

Assignment IV - Earthquakes: 12.5%

Earthquakes Exam: 25 %

**Exams: NON-CUMULATIVE**

(all dates and times tentative)

- Exam 1: available October TBD for 24 hours
- Exam 2: Choose one of 2 dates:
  - Thursday December 3 – Friday December 4 **OR**
  - Sunday December 20, between 4pm and 7pm
- **\*Note: As this is an asynchronous online class, you have the choice of taking exam 2 in early December or during the specially designated remote asynchronous exam slot on Sunday December 20 from 4 to 7 pm**

**Assignments:**

- Assignment 0 - Syllabus
- Assignment I - Volcanoes
- Assignment II - Volcanoes
- Assignment III - Earthquakes
- Assignment IV - Earthquakes

**Honor pledge:** All students will need to sign the Rutgers Honor Pledge on every major exam, assignment, or other assessment as follows: *On my honor, I have neither received nor given any unauthorized assistance on this examination (assignment, paper, quiz, etc.)*

# Earthquakes and Volcanoes Fall 2020

## Syllabus

\*Dates and content are subject to change

Day	Week of	Topic	Reading	Assignment
1	Sept. 1	Syllabus review; scientific method	Read the syllabus in its entirety; Answer the questions for extra credit. <b>Canvas module "Scientific Method"</b>	Syllabus questions
2	Sept. 7	Geology and Earth science basics: plate tectonics & Earth structure	<b>Canvas module "Basics of Earth Science"</b> Basics of Earth Science - Earth Structure Basics of Earth Science - Plate Tectonics	
3	Sept. 14 <i>*last day to drop course without a W</i>	Volcanic classification & eruption types	<b>Canvas module "Volcanoes"</b> Basics; Volcano Types; Eruptions 1; Eruptions 2 <b>Online textbook "<a href="#">How volcanoes work</a>"</b> Eruption types; Eruption products; Volcano Landforms	Assignment 1 due Friday September 18 by 11:59pm
4	Sept. 21	Eruption controls, settings	<b>Canvas module "Volcanoes"</b> Eruptions 3; Settings 1; Settings 2; Settings 3 <b>Online textbook "<a href="#">How volcanoes work</a>"</b> Eruption types; Eruption Dynamics	
5	Sept. 28	Eruption controls con't; Volcanoes & people: Historical eruptions	<b>Canvas module "Volcanoes"</b> Settings 4; Mt. St. Helens; Mount Pelee; Krakatau; Santorini <b>Online textbook "<a href="#">How volcanoes work</a>"</b> Historical Eruptions	
6	Oct. 5	Volcanoes and Humans: Monitoring; Hazards, Risks, Mitigation	<b>Canvas module "Volcanoes"</b> Volcano Monitoring 1; Volcano Monitoring 2 Volcanic Hazards Volcanic Risks	
7	Oct. 12	Climate effects; Deep Sea and other planets; tephrostratigraphy	<b>Canvas module "Volcanoes"</b> Climate effects; Deep Sea Volcanoes; Other Planets; Tephrostratigraphy <b>Online textbook "<a href="#">How volcanoes work</a>"</b> Planetary volcanism	Assignment 2 due Friday October 16 by 11:59pm
8	Oct. 19	Exam 1	Possible review session will be scheduled prior to the exam.	<b>Exam 1 Thursday October 22 – Friday October 23</b>
9	Oct. 26	Basics of earthquake science; history;	<b>Canvas module "Earthquakes"</b> Elastic rebound; Myths; Detection;	

		detection, location, & measuring	Size; Prediction	
10	Nov. 2	Faults & earthquakes, earthquake locations; Richter Scale	<b>Canvas module "Earthquakes"</b> Faults; Fault Zones; Focal Sphere; Rupture Big and Small	
11	Nov. 9	Using earthquake information; Notable earthquakes	<b>Canvas module "Earthquakes"</b> Using Earthquake Information 1; Using Earthquake Information 2; Historic Earthquakes	Assignment 3 due Friday November 13 by 11:59pm
12	Nov. 16	hazards, risks and mitigation; forecast and prediction	<b>Canvas module "Earthquakes"</b> Earthquake hazards; Seismic Risk; Earthquake Forecast; Earthquake Prediction; Measuring	
13	Nov. 23	Thanksgiving	Thanksgiving	
14	Nov. 30 <i>*last day to drop course with W</i>	Case studies	<b>Canvas module "Earthquakes"</b> 2004 Sumatra; 2011 Tohoku; 1906 San Francisco; Recent Earthquakes: Sichuan & Haiti	Assignment 4 due Monday November 30 by 11:59pm
15	Dec. 7	Exam 2	Possible review session will be scheduled prior to the exam	<b>Exam 2</b> Choose one of 2 dates: 1. Thursday December 3 – Friday December 4 OR 2. Sunday December 20, between 4pm and 7pm

### Considering a major or minor in Earth & Planetary Sciences or looking for another course?

The Department of Earth & Planetary Sciences offers 4 major tracks:

- [Geological Sciences](#)
- [Environmental Geology](#)
- [Planetary Science](#)
- [General Option: Earth Science](#)

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 (natural science) requirement.

- [Information about introductory and survey courses](#)
- [Information about the 2 minor options](#)
- [General information for prospective students from current students and alumni](#)

## **Additional Useful Information**

These services are being provided remotely during Fall 2020, unless otherwise stated on their website.

### **University-wide COVID-19 Information**

<https://coronavirus.rutgers.edu/>

### **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 professionals within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers 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.

Crisis Intervention : <http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/>

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

### **Violence Prevention & Victim Assistance (VPVA)**

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / [www.vpva.rutgers.edu/](http://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.

### **Division of Diversity, Inclusion, and Community Engagement**

(848) 932-4400 <https://diversity.rutgers.edu/> / 106 Somerset Street, 7th Floor, New Brunswick, NJ 08901

The Rutgers Division of Diversity, Inclusion, and Community Engagement endeavors to advance, promote, and advocate for inclusiveness, diversity, and equity as key elements to achieve Rutgers' strategic vision to be preeminent in research, excellent in teaching, and committed to community. The website offers assistance to international scholars, contains a number of academic scholarships and grants for historically marginalized humans, and offers many resources for students including support during crisis or incidents of bias, academic resources, scholarship and internship opportunities, disability and accessibility, mentoring, and more.

### **The Center for Social Justice Education and LGBT Communities (SJE)**

(848) 445-4141~ 08901 <http://socialjustice.rutgers.edu/> ~ 17 Bartlett St. College Ave, New Brunswick, NJ

The SJE promotes a supportive environment for students of all backgrounds, with a focus on gender and sexuality, while promoting both social and educational opportunities for leadership, identity, and social justice advocacy development. With a critical understanding of multiple identities and connected systems of oppression, SJE works collaboratively with students, faculty, administrators, staff and community members to develop relevant initiatives and policies that center diversity, inclusion, and intersections of identity. Their resources page includes a wealth of information regarding mental health counseling, access to the Rutgers food pantry, LGBTQA scholarships, academic advising, and social justice academic programs, as well as advice for bystanders who want to do something.

## **Disability Services**

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

## **Current Academic Integrity Policy:**

Students are expected to maintain the highest level of academic integrity. You should be familiar with the university [policy on academic integrity](#). Violations will be reported and enforced according to this policy.

Use of external website resources such as Chegg.com or others to obtain solutions to homework assignments, quizzes, or exams is cheating and a violation of the University Academic Integrity policy. Cheating in the course may result in grade penalties, disciplinary sanctions or educational sanctions. Posting homework assignments, or exams, to external sites without the instructor's permission may be a violation of copyright and may constitute the facilitation of dishonesty, which may result in the same penalties as plain cheating.

## [Academic Integrity Resources for Students](#)

## **Intellectual Property**

Almost all original work is the intellectual property of its authors. These works may include syllabi, lecture slides, recorded lectures, homework problems, exams, and other materials, in either printed or electronic form. The authors may hold copyrights in these works, which are protected by U.S. statutes. Copying this work or posting it online without the permission of the author may violate the author's rights. More importantly, these works are the product of the author's efforts; respect for these efforts and for the author's intellectual property rights is an important value that members of the university community take seriously. For more instructions on copyright protections at Rutgers University, please refer to the [Rutgers Libraries](#).

## **Acknowledgments**

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