

# SIO 170- Introduction to Volcanology

MWF 9:00-9:50 (VH 100)

Instructor: Geoff Cook

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Welcome to the wonderful and spectacular world of volcanology! I am thrilled to be able to offer you this experience, and I very much hope that it is an outstanding experience for everyone. The class will introduce you to the science of volcanology, including fundamental principles and processes of volcanic eruptions. I hope to give you a better understanding of what volcanologists do and why volcanology is an important scientific discipline from a societal standpoint. Please let me know if you have questions or concerns and remember that I am here to help at all times.

## ***Learning Outcomes:***

Students will be able to:

- List and classify different volcanic morphologies.
- Distinguish between the various types of volcanic activity.
- Explain the relationship between magma genesis, plate tectonics, and volcanism and use this to explain volcanic activity.
- Appraise volcanic hazards in the context of their threat to local communities and the public.
- Analyze past volcanic events and hypothesize about future hazards.

## ***Class Organization and Grading:***

This class will include weekly lectures that will take place MWF in Vaughan Hall 100, on the Scripps Institution of Oceanography campus. The schedule is listed in detail below. Please be sure to read the assigned chapters, attend lectures and keep up with assigned work each week. No late assignments will be accepted without prior approval or a documented excuse. Please communicate directly with me via email if you're having difficulties. Sooner is much better than later.

Your grade is based on the following:

Midterm exam: 20%	Final exam: 25%
Weekly reading reflection: 15%	Weekly content quizzes (lectures and readings): 15%
Homework assignments: 15%	In-class assignments (10%)

**Note:** "A" is 93% and above; "A-" is 90-92.9%; "B+" is 87-89.9%; "B" is 83-86.9%; "B-" 80-82.9%. Breakdown is the same for "C" and "D" range; <60% is an "F". There is no curve for the class.

## ***Academic Integrity (Students' Responsibilities)***

Students are expected to complete the course in compliance with the instructor's standards. No student shall engage in any activity that involves attempting to receive a grade by means other than honest effort. University policies, regulations, and standards of conduct can be found on the Academic integrity office website <https://academicintegrity.ucsd.edu/>. Course content is protected and may not be shared, uploaded, or distributed. Use of Artificial Intelligence (ChatGPT, text generators, etc.) is prohibited in this class for any reason; all work must be your own and in your own words, regardless of the assignment.

### ***Classroom Conduct***

Please be respectful at all times. You are expected to arrive *on-time*, pay attention, participate as requested, and stay for the entire class. Cell phones must be put away and closed for the duration of class meetings.

### ***Textbooks and Readings***

The class text is *Volcanoes* 2<sup>nd</sup> edition by Francis and Oppenheimer. It is required. You will need to read the assigned chapters that are keyed to the topics we will be discussing in class. There are weekly Canvas quizzes based on the reading and lectures, and the exams will include material from the text, so please acquire a copy as soon as possible (used or new is fine).

## **SIO 170 Schedule**

**Note:** This syllabus is an outline of proposed events. It is subject to change; however, never without notification, and never to advance the due dates of assignments.

<b><u>Date</u></b>	<b><u>Lecture Topic</u></b>	<b><u>Ch. in <i>Volcanoes</i> 2<sup>nd</sup> ed.</u></b>
9-27	Introduction to the class	1-4
9-30	Four classic eruptions	3
10-2	Tectonics, geologic settings, and magma	2, 4
10-4	Tectonics, geologic settings, and magma	2, 4
10-7	Types of volcanic structures	13
10-9	Types of volcanic structures	13
10-11	Types of volcanic structures	13
10-14	Styles of eruption: eruptive classification	5
10-16	Styles of eruption: eruptive classification	5
10-18	Styles of eruption: eruptive classification	5
10-21	Lava flows and associated occurrences	6
10-23	Lava flows and associated occurrences	6
10-25	Introduction to pyroclastic density currents	7
10-28	Pyroclastic eruptions and pyroclastic density currents	7-10
11-30	Pyroclastic eruptions and pyroclastic density currents	7-10
<b>11-1</b>	<b>MIDTERM EXAM (details to follow)</b>	
11-4	Lahars (volcanic mudflows)	12
11-6	“Supervolcanoes” and calderas	11
11-8	“Supervolcanoes” and calderas	11
<b>11-11</b>	<b>NO CLASS (Veteran’s Day Holiday)</b>	
11-13	Volcanic hazards and monitoring techniques	17
11-15	Volcanic hazards and monitoring techniques	17
11-18	Volcanoes and Climate	16
11-20	Volcanic risk and society; reducing volcanic risks	18

11-22	Hydrovolcanism/submarine volcanism	14
11-25	Case studies of famous eruptions (Hawai'i)	N/A
11-27	Case studies of famous eruptions (St. Helens)	N/A
<b>11-29</b>	<b>NO CLASS (Thanksgiving Holiday)</b>	
11-28	Case studies of famous eruptions (TBA)	N/A
11-30	Case studies of famous eruptions (TBA)	N/A
12-2	Case studies of famous eruptions (TBA)	N/A

**Final Exam: Wednesday, December 11, 8am-11am (Vaughan Hall 100)**