**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 the lectures and keep up with the 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%

Canvas quizzes (weekly, based on readings and lectures): 20%

Discussion posts and homework assignments: 20%

Volcano report: 15%

**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.

***Textbooks and Readings***

The class text is *Volcanoes* 2nd 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).

***(Continued below)***

**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.

# Date Lecture Topic Ch. in *Volcanoes 2nd ed.*

10-2 Introduction 1

10-4 Four classic eruptions 3

10-6 Tectonics, geologic settings, and magma 2, 4

10-9 Tectonics, geologic settings, and magma 2, 4

10-11 Types of volcanic structures 13

10-13 Types of volcanic structures 13

10-16 Styles of eruption: eruptive classification 5

10-18 Styles of eruption: eruptive classification 5

10-20 Styles of eruption: eruptive classification 5

10-23 Lava flows and associated occurrences 6

10-25 Lava flows and associated occurrences 6

10-27 Introduction to pyroclastic density currents 7

10-30 Pyroclastic eruptions and pyroclastic density currents 7-10

11-1 Pyroclastic eruptions and pyroclastic density currents 7-10

**11-3**  **MIDTERM EXAM (details to follow)**

11-6 Lahars (volcanic mudflows) 12

11-8 “Supervolcanoes” and calderas 11

**11-10**  **NO CLASS (Veteran’s Day Holiday)**

11-13 “Supervolcanoes” and calderas 11

11-15 Volcanic hazards and monitoring techniques 17

11-17 Volcanic hazards and monitoring techniques 17

11-20 Volcanoes and Climate 16

11-22 Volcanic risk and society; reducing volcanic risks 18

**11-24**  **NO CLASS (Thanksgiving Holiday)**

11-27 Hydrovolcanism/submarine volcanism 14

11-29 Case studies of famous eruptions (Hawai’i)N/A

12-1 Case studies of famous eruptions (St. Helens) N/A

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 13, 8am-11am (Vaughan Hall 100)**