

SIO 46GS- Global Volcanism

Instructor: Geoffrey Cook

Email: gwcook@ucsd.edu

Welcome to SIO 46GS *Global Volcanism*! This four-unit course constitutes one half of the curriculum for the Global Seminar in Bern, Switzerland this summer. The class is designed to teach you about volcanoes—how, why and where they occur—but it is also intended as an in-depth case study of European volcanism. During the five-week session you will learn about the volcanoes of Europe—past, present, and future. We will explore their geologic origins, eruptive styles, and histories. In addition, we will focus on the societal impact of volcanism on this heavily populated region. Finally, we will investigate some of the most famous recent eruptions (Vesuvius, Campi Flegrei, and Santorini) and analyze the ways in which Europe and its citizens were affected.

Class Organization and Grading:

This class will include weekly lectures, demonstrations, and discussions that will take place during the regularly assigned class periods. In addition, we will have several excursions in the field that will build on the lecture material.

Your grade will be based on the following:

- In class exercises (25%), quizzes (25%), homework, field exercises (25%)
- Final exam (25%)

Textbooks and Readings:

The text for the class is *Volcanoes* by Oppenheimer and Francis, 3rd ed. You are expected to complete the assigned readings. In addition, various handouts and papers will be distributed.

Learning Goals:

Students will be able to:

- List the 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 European volcanism.
- Appraise volcanic hazards in the context of their threat to local communities and the public.
- Analyze past volcanic events and hypothesize about future hazards.

SIO 46GS Schedule- Summer Session 2021

General 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.

<u>Date</u>	<u>Lecture Topics</u>
Week 1: 6/29	Welcome and introduction to volcanology Background geology: rocks, minerals, plate tectonics and geologic processes How and why volcanism occurs Volcanic structures
Week 2: 7/6	Types of eruptive activity Products of volcanic eruptions Volcanic Hazards Volcano monitoring techniques
Week 3: 7/13	Case studies: Italian Volcanism- Mt. Vesuvius, the A.D. 79 eruption and the threat to Naples Case studies: Italian Volcanism (Etna, Aeolian Islands, Campi Flegrei)
Week 4: 7/20	Caldera-forming eruptions Case studies: Greek Volcanism- Santorini and the Minoan Civilization
Week 5: 7-27	Case studies: Volcanoes of the mainland: Germany Case Studies: Volcanoes of the mainland: France Future volcanic threats to the European Community Final Exam- 7/30