# *HOW VOLCANOES WORK — GEOLOGY 308*

***Course Outline, Spring 2003, TuTh 9:30-10:45 a.m.***


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***Office Hours:*** Room. CSL-402; MWF 11:00-12:00 p.m.,
or by appointment

***Optional Text:*** *Volcanoes*, 3rd edition (1998) by Decker and Decker
W. H. Freeman & Co.

***Website:*** http://www.geology.sdsu.edu/how_volcanoes_work

***COURSE DESCRIPTION:*** This is a general education course for upper-division students. The course will examine the inner workings of the earth, the science behind volcanoes and volcanic processes, and the impact of volcanic eruptions on humankind.

***GUIDELINES:*** This is a science course which requires critical thinking and analysis. However, it is largely descriptive in that concepts and connections are studied through words and diagrams, generally without recourse to mathematical formulas and chemical equations. Please feel free to ask questions and invoke discussion at any time.

***EXAMINATIONS AND GRADING:*** Final grades will be based on four exams worth 100 points each, and a research paper, or project, worth 50 points. Guidelines for the paper/project will be handed out in class; the due date is ***April 22***. When calculating the final grades, your lowest exam score will be dropped and the final grade will be based on a class curve established for the remaining 350 total points. There will be ***no make-up exams***. If you miss an exam, it will be dropped as your lowest score; however, you ***cannot drop the final examination***. If you are taking the course CR/NC, you must obtain a "C" grade for Credit. Purchase *one* large red Parscore Scantron (F-288) for the first exam, and *three* normal-sized Parscore Scantron (F-289) for the remaining exams.

*"Giant smoking volcanoes*
*stand in a row*
*like the pipes of a cosmic organ*
*through which the mighty breath of the earth*
*blows its roaring music*"

Robert Scholten

**PRELIMINARY CLASS SCHEDULE**

(***Very tentative:*** *changes may be made to this schedule as necessary*)

| WEEK | LECTURE TOPIC | WEBSITE SECTIONS |
|---|---|---|
| Jan. 21/ 23 | Introduction / Formation of the Earth / | |
| Jan. 28/30 | Energy for Volcanism / Geologic Time | |
| Feb. 4/6 | Plate Tectonics | |
| Feb. 11/13 | **EXAM 1 (Feb. 11)** / Volcanic Rocks / Eruption Dynamics / | **ERUPTION DYNAMICS:** Controls / Variability / Eruption model |
| Feb. 18/20 | Intro. to Volcanic products / Volcanoes | **ERUPTION PRODUCTS:** Tephra<br>**ERUPTION LANDFORMS:** Volcano Types |
| Feb. 25/27 | Volcanoes and Eruption Types / Lava Domes / Calderas / | **ERUPTION LANDFORMS:** Volcano / Calderas / Domes / **ERUPTION TYPES:** all but *Vulcanian* |
| March 4/6 | Santorini (~1636 B.C.) / Mt. St. Helens (1980) | **HISTORIC ERUPTIONS:** Santorni / St. Helens |
| March 11/13 | **Exam 2 (March 11?)** / Lava flows | **ERUPTION PRODUCTS:** Lava flow types |
| March 18/20 | Flow Features / Lava-water | **ERUPTION PRODUCTS:** Lava flow features / Lava and water |
| March 25/27 | Hawaii / Pyroclastic Flows Mt. Pelée | **ERUPTION PRODUCTS:** Pyroclastic Flows / **HISTORIC ERUPTIONS:** Mt. Pelée |
| April 1/4 | ***SPRING BREAK*** | |
| April 8/10 | Montserrat eruption / Lahars | **ERUPTION PRODUCTS:** Lahars |
| April 15/17 | Nevado del Ruiz / Mt. Rainier / Laki (1783) / Krakatau (1883) | **HISTORIC ERUPTIONS:** Nevado del Ruiz<br>**HISTORIC ERUPTIONS:** Krakatau |

***PAPERS / PROJECT: Due on or before <u>APRIL 22</u>***

| | | |
|---|---|---|
| April 22/24 | Pinatubo (1991) / **EXAM (April 24?)** | |
| April 29/May 1 | Giant Volcanic Eruptions / Long Valley, CA / Volcanic Gas Hazard / Lake Nyos (1986) / Mammoth Mtn., CA / Kilauea gas hazards | **ERUPTION PRODUCTS:** Volcanic gases<br>**HISTORIC ERUPTIONS:** Lake Nyos |
| Apr. 29 / May 1 | Climate Effects of Volcanic Eruptions | **ERUPTION PRODUCTS:** Climate effect |
| May 6/8 | Climate / Planetary Volcanism | **VOLCANISM ON OTHER WORLDS** |

May 14 (Tuesday) **FINAL EXAM – 10:30 a.m.**

***Note: Final exam <u>must</u> be taken at this time - no exceptions.***