GG 300: Volcanology

**Syllabus/Course Contents**

**Fall 2014**

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**Time:** Tues-Thurs 10:30-11:45 pm  
**Place:** POST 708

3 credits

**Objectives:**
- Introduce the fundamental physical processes & concepts of volcanology
- Illustrate the impacts of volcanoes on communities
- Develop scientific research, problem-solving, and critical thinking skills

**Content:**
This course spans the range of physical approaches to eruption process and the sociology of volcanic crises. It has a strong field emphasis which focuses on characterizing eruption products of a range of length scales. In particular we will chart the uncertain progress of the 2007-2019 eruption of Kilauea.

The course will involve lectures, several laboratories, 2 field trips, videos and student participation in giving a presentation. Modules include: the rheology and transport of magma in magma chambers and conduits; quantitative models for intensity and style of explosive eruptions using classical historical eruptions as examples; transport and emplacement of lava flows with an emphasis on the current (1983-2014) Kilauea eruptions; origins and characteristics of pyroclasts and pyroclastic rocks; integrated monitoring of active volcanoes, evaluation and impacts of volcanic hazards and volcanic crises.

**Course characteristics**

- One field trip on Oahu and one on the Big Island, students must attend (preferably all) or do substitute homework projects.
- One group research project linked to crisis management and eruption response.
- Four homework assignments, and three mid-term tests (NO final examination).
Field trips:

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<thead>
<tr>
<th>trip</th>
<th>topic</th>
<th>venue</th>
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<tbody>
<tr>
<td>1</td>
<td>Kilauea volcanology</td>
<td>Kilauea</td>
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<tr>
<td>2</td>
<td>explosive eruptions and deposits</td>
<td>Lanai Lookout</td>
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Text and reading:

We will use the text more as a supplementary reference than as a guide for the course; we will not spend much class time regurgitating the information in the text; specific chapters or parts of chapters will be assigned, not necessarily in the order in the book. I will make the volume available to you as a pdf. The second edition is due out in early 2015, where new chapters are available we will use these.

Prerequisites:
100 level geology and basic sciences (math or phys or chem), 200/300 level mineralogy/petrology/earth materials, or permission of instructor.

Other class requirements
- Use of e-mail and the world-wide-web: As a student at UH, you are entitled to an e-mail account. We will use e-mail via Laulima as an auxiliary means of communicating with each other outside class time. We will also be using WWW resources for our projects and homework.

- Field trip attendance: The Oahu field trip will be on either Saturday or Sunday and will last 5-6 hours. There will be a 2-day field trip on the Big Island. Two homework exercises will be based on the field trips- if you are unable to attend other work will be required instead. It will be VERY hard to maintain comparable progress with your classmates if you are unavailable to participate in the field trips.

- Assignments turned in on time: Assignments must be turned in at the beginning of class on the designated day. Unjustified late assignments will receive one grade-step lower. The only exceptions will be pre-arranged absences or verified illness.

- Attendance: Because we will be doing project work, attendance will be mandatory for this class. If you know you will miss a day because of scheduled travel or another reason, please let me know in advance. There will be no make-up tests except by prior arrangements with me.