GG607 - Submarine Volcanoes - Syllabus

Example Instructor: Ken Rubin  email: krubin@hawaii.edu

Course Content: We will explore various aspects of active volcanism in the deep ocean and its effect on the surrounding environment, focusing on recent eruptions.

Course Format: This is a seminar course where participants read and discuss papers and talk about the latest research. The plan is to meet once per week for an introductory lecture/discussion and then to meet again for a second session to discuss the paper(s) for the week. Initially the instructor will lead the paper discussions but by mid-semester course enrollees will lead the discussions. The format will be conversation and as informal as possible to encourage participation and lots of questions during class.

Grading: Grading will be based on class participation and student-led discussions.

Topics: We will discuss all of the following (not necessarily in this order):
1. Submarine Effusive Volcanism  
2. Submarine pyroclastic activity/explosive volcanism  
3. Ocean ridge volcanism.  
4. Hydrothermal Processes and response to eruptions  
5. Remote Volcano Mapping Methods  
6. Seismic Detection of Eruptions  
7. Magma Reservoirs and Magma Chemistry  
8. Submarine Hawaiian Volcanism  
9. Submarine Arc Volcanoes  
9. Eruption Geochronology  
10. Geology and petrology of individual eruption deposits  
11. Reconstructing eruptions from sea floor lava morphology  
12. Multidisciplinary/ecological studies of submarine eruption responses  
13. Special topics with discussions led by Students

Topics will be illustrated with Specific examples drawn from to address two categories of information: (I. Volcanic products; II. Eruptions and Related effects)

GG Student Learning Objectives (SLOs):
GG department has provisionally defined 4 and 5 learning objectives, respectively, for the MS and PhD graduate degree programs, relating to Technical knowledge, the conduct of science, Oral and written skills, and Professional skills. This course directly incorporates content relevant some of these:

M.S.
1. Technical knowledge. M.S. graduates are proficient in applying technical knowledge of theory, laboratory methods, field methods, computer applications, and the supporting disciplines (math, physics, chemistry, biology) to help advance the fields of geology and geophysics.
2. Communicate geological knowledge M.S. graduate are able to effectively communicate the findings of their research in writing at a level comparable to that of a scientific journal publication, and defend it orally to the satisfaction of a scientific audience. They are also able to communicate orally about Geology though seminar or conference presentations.

Ph.D.
1. Technical knowledge. Ph.D. graduates are proficient in applying technical knowledge of relevant theory, laboratory methods, field methods, computer applications, and the supporting disciplines (math, physics, chemistry, biology) to advance the fields of geology and geophysics.
2. Expertise in a sub-discipline. Ph.D. graduates are able to comprehensively synthesize, evaluate, and interpret relevant fundamental knowledge in her or his sub-discipline.
3. Communicate geological knowledge Ph.D. graduates are able to effectively communicate the findings of their research in writing at a level comparable to that of scientific journal publications, and defend it orally to the satisfaction of a scientific audience. They are also able to communicate orally about Geology though seminar or conference presentations.