ERTH 104 Volcanoes in the Sea (H-Focus) *Syllabus*

How have the specific geological and geophysical characteristics of Pacific islands affected the societies that developed there? How do those characteristics affect the societies that live there (here) now?

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text: none - see Reading materials at: ***http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Readings/GG104_readings.htm***

week#	Topics	**Readings** (page #s refer to publication, not pdf)	SLO*
1a	Intro to Geology, Earth Structure, Tectonics I		3,5
1b	Tectonics II, Hotspots, Magma	Kious & Tilling (1996: 6-12, 25-27), Menard (1986: 45-49)	1,3,5
2a	ʻAʻā and Pāhoehoe Lava Flows, Dikes	Macdonald *et al*. (1983: 6-11, 21-37), Hazlett & Hyndman (1996; 24-31)	1,5
2b	Climate Change *(Chip Fletcher)*	Menard (1986: 71-85), IPCC (2007)	1,3,5
3a	Eruption Styles	Macdonald *et al*. (1983: 12-21)	1,5
3b	Geological Aspects of Stones for Implements	Kamakau (1976: 67-70), Malo/Chun (2006; 16-17; 41-42; 168-171), Kahāʻulelio (2006)	1,5
4a	Stone Implements in Olden Days	Hiroa (1957 – pictures only), Kāne (1997: 50-95)	1
4b	Stone Use in Modern Hawaiʻi	Leidmann (1996), Cheever & Cheever (2005), Simon (2005)	1
	LĒʻAHI FIELD TRIP (with ERTH 101L)		
5a	Volcano Evolution, Rejuvenated Volcanism and Pele's Journey Down the Hawaiian Chain	Ozawa *et al*. (2005: 1-2, 8-10), Westervelt (1916: 1-13, 63-71), Kanahele & Wise (1989: 84-103) , Hazlett & Hyndman (1996; pp 7-16)	1,3, 5
5b	The Healing Stones of Waikīkī *(Babette Galang, Kathleen Kang-Kaʻulupali)*	Boyd (1923), HawaiianStyle (2007)	1, 5
	KĪLAUEA FIELD TRIP		
6a	Pele, Hiʻiaka, Keoūa, and Keanakākoʻi	Emerson (1915: 162-216), Westervelt (1916: 126-145), Kāne (1996), Hoʻulumāhiehie/Nogelmeier (2006), Swanson (2008), Swanson & Rausch (2008), Williams (2009)	1,3,5
6b	Making Stone Implements (*Eric Enos)*	Kanahele & Wise (1989: i-vi, 19-20)	1,3,5
7a	Gathering pōhaku for final project		

7b	Midterm review	Review sheet	
8a	**MIDTERM EXAM**		
8b	Hawaiian Science *(Sam Gon)*	Lili'uokalani (1897: 1-2), Beckwith (1970: 293-306), Gon (2001a; 2001b), Malo/Chun (2006; 11-14)	1,3,5
9a	Earthquakes	Robertson et al. (2006: 1-40), Reynolds *et al*. (2008: 332-347)	1, 5
9b	Earthquakes in Hawai'i	Brigham (1909), Tilling *et al.* (1976)	1,3,5
	SOEST OPEN HOUSE (extra credit opportunity)		
10a	Tsunami, Causes, Effects	Kamakau (1976: 3-13), Reynolds *et al*. (2008: 330-331, 348-349)	1,3,5
10b	The March 11, 2011 Tohoku Earthquake & Tsunami		1,3,5
11a	Orphan Tsunami and the Cascadia Subduction Zone	Atwater *et al*. (2005), Schulz (2015)	1,3,5
11b	High Islands and Low Islands	Menard (1986: 109-145), Nunn (2003)	1,3,5
	FIELD TRIP TO WAIPAO	**(IT WILL BE MUDDY, INCLUDES SERVICE WORK)**	
12a	Effects of Island Type and Raw Materials on Cultures	Diamond (1999: 53-66)	1,5
12b	Rapa Nui and the Pitfalls of not Thinking Critically (stone implement display card drafts due)	Hunt & Lipo (2011)	1,5
13a	Hydrology, Streams, and Groundwater	Gingerich & Oki (2000), Oki (2003), Miike (2004)	1,3
13b	Hydrological Effects on Pacific Cultures	Kirch (1994: 1-15)	1,3
	FIELD TRIP TO KAUA'I		
14a	Introduction to Hawai'i Soils *(Jonathan Deenik)*	Deenik and McClellan (2007)	1,3
14b	**THANKSGIVING**		
15a	Glaciation on Mauna Kea	Macdonald *et al*. (1983: 252-259), Hazlett & Hyndman (1996: 124-127), Patrick & Kauahikaua (2015)	1,3,5
15b	The Effects of Sea Level Rise in Tuvalu *(Jane Taafaki-Sam)*	Chipperfield & Harrison (2000), Michaels (2001), Allen (2004), Field (2005), WorldView (2005)	1,3,5
16a	Present your pōhaku		1,5

16b	Soil and Dryland Farming on Kohala	Hazlett & Hyndman (1996: 36-49), Vitousek *et al.* (2004)	1,3,5

Powerpoint presentations from lectures and guest lectures are available at:
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/GG104_PowerPoints.htm
Midterm and Final review questions are available at:
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/GG104_EXAM_STUDY_GUIDES.htm

Course work will include:
-reading assignments
-class lectures and activities
-field trips (you must go on 2 of the 4)
-1 mid-term (Oct. 13) and a final (Dec. 17)
-a stone implement (due Dec. 1)

Grades will be based on:
-1 mid-term (25%)
-1 non-cumulative final (25%)
-2 field trips (12.5% each)
-your stone implement (25%)

There is a web site for this class where powerpoint presentations, exam reviews, color copies of some reading materials, and field trip photos will be displayed: ***http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/GG104_webpage01.htm***

Please do the reading before coming to class. There is no textbook for this topic, so I've cobbled together a bunch of stuff from a variety of books. We're going paperless this year, so all the readings are on Laulima and the course webpage.

There is one term project, a stone implement that you will make yourself using traditional Hawaiian methods (no metal, no power tools!). We will learn about the uses of stone and their significance in Hawaiian culture by a number of experts in this topic, including Eric Enos, Earl Kawa'a, and Sam Gon. Then we will gather our own stones, and each of you will start making a stone implement of your choice. You need to finish by the end of the semester. You also need to produce a 1-page display card that will go with your stone implement while it is on display in the POST building. This card needs to say what your stone implement is used for, and how the geological qualities of the particular rock relate to it. For example, what qualities made the implement easy (or difficult) to produce? What qualities made the implement good for its intended purpose? A draft of what you plan to write for your card is due on Nov. 9 - I'll give you more information about this later. There are photos of previous students' final stones at:
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/GG104_Pohaku_webpage01.htm, and of the stone-gathering trips at:
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Waianae/GG104_Waianae_webpage01.htm

You are required to go on two of the two other field trips. These field trips last pretty much all day, so you'll need to bring lunch, water, sun protection, rain protection, and something to write with. The Lē'ahi trip will be a walking trip, and the Waipao trip will be by bus. There are photos of previous field trips on the web at:
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Leahi/GG104_Leahi_webpage01.htm
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Heeia/GG104_Heeia_webpage01.htm

There will be neighbor island field trips jointly with the ERTH101 mob. They are optional, and will give you a chance to see Hawaiian geology in real life. If you go on either trip and write 2 pages about something you learned there, it can count for one of your field trips. The cost typically comes out to $100-120 + airfare, and you will be responsible for making your own flight arrangements. More details about the trips will be available soon. For photos from previous years' trips, see:
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Kilauea/GG104_Kilauea_webpage01.htm and
http://www.soest.hawaii.edu/GG/FACULTY/ROWLAND/GG104/Kauai/GG104_Kauai_webpage01.htm

There is no lab for this class, however, you are encouraged to sign up for the Dynamic Earth laboratory (ERTH 101L). It is a separate class and will give you lots of good hands-on experience. You are also encouraged also to attend department seminars, read and bring in news articles related to Earth science and Pacific culture, and look around at your natural surroundings wherever you go. BECOME A GEO-NERD! By the way, we are always looking for more Earth Science undergraduate majors…

*Earth Sciences undergraduate courses have to consider how they address a number of **Student Learning Objectives** (SLOs), which the Earth Sciences Department has decided are key attributes and/or abilities of any Earth Sciences student. They are (in no particular order):

1. Students can explain the relevance of geology and geophysics to human needs, including those appropriate to Hawaii, and be able to discuss issues related to geology and its impact on society and planet Earth.
2. Students can apply technical knowledge of relevant computer applications, laboratory methods, and field methods to solve real-world problems in geology and geophysics.
3. Students use the scientific method to define, critically analyze, and solve a problem in earth science.
4. Students can reconstruct, clearly and ethically, geological knowledge in both oral presentations and written reports.
5. Students can evaluate, interpret, and summarize the basic principles of geology and geophysics, including the fundamental tenets of the sub-disciplines, and their context in relationship to other core sciences, to explain complex phenomena in geology and geophysics.

CHEATING (ON EXAMS, FOR EXAMPLE), PLAGIARISM, ETC. IS TOTALLY UN-COOL AND VIOLATES THE UHM STUDENT CODE OF CONDUCT (SEE PP. 565-566 OF THE 2011-2012 UH CATALOG). IT WILL NOT BE TOLERATED, AND WILL RESULT IN A GRADE OF F FOR THE COURSE AND A LETTER SENT TO YOUR ACADEMIC DEAN EXPLAINING THE REASON FOR THE F.

If you have a disability and related access needs the Department will make every effort to assist and support you. For confidential services students are encouraged to contact Kōkua, the Office for Students with Disabilities, located on the ground floor (Room 013) of the Queen Lili'uokalani Center for Student Services.

Title IX: The University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:

As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, use the **confidential resources available here**: http://www.manoa.hawaii.edu/titleix/resources.html#confidential

If you wish to directly REPORT an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence or stalking as well as receive information and support, contact: Dee Uwono,Title IX Coordinator (808) 956-299 t9uhm@hawaii.edu