

Earth Sciences Department
ERTH 104 Volcanoes in the Sea (H-Focus)
Fall 2023

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Office hours are available upon request. Please email me to schedule an appointment.

I. Course description

In this class we will explore how specific geological and geophysical characteristics of the Pacific islands have affected the societies, and cultures that developed in Hawai'i and across the islands of the Pacific.

II. Course information, policies, and resources

H-Focus: This course is designated as a H-focus course because it addresses Hawaiian, Asian, & Pacific issues. The course content reflects the intersection of Asian and/or Pacific island cultures with Native Hawaiian culture, provides an indigenous Pacific perspective, improves understanding of aspects of indigenous Pacific societies, and ultimately provides an in-depth analysis of Hawaiian and Pacific topics.

Online course: This is an online course that requires students to be fairly skilled in the use of the internet. We will be communicating using UH's course software *Laulima*, through which you will access and submit all course materials. Please do not email assignments to your instructor. Through *Laulima* you will also watch linked videos on YouTube and other outlets, along with the instructor's video lecture recordings.

If you are new to *Laulima*, you can follow this link to the [Laulima Support for Student help page](#). During the semester, if technology questions arise, call the Information Technology Services (ITS) at (808) 956-8853 or Toll Free (800)-558-2669. You can also click on the "Help" button in the *Laulima* course shell and it will connect you to helpful resources to get you through just about any issue. Since we will only communicate using *Laulima* and email you will need to use your UH student email. I may be able to respond to your personal email but when I send you a message it will be to your UH account.

Text: All reading materials will be made available by the instructor.

Statement on Disability: If you have a disability and related access needs, please contact the KOKUA Program (Office for Students with Disabilities) at 956-7511, KOKUA@hawaii.edu, or go to Room 013 in the Queen Lili'uokalani Center for Student Services. Please know that I will work with you and KOKUA to meet your access needs based on disability documentation. Kookua's services are confidential and offered free of charge.

Academic Integrity and Ethical Behavior: Cheating, plagiarism, or other forms of academic dishonesty are not permitted within this course and are prohibited within the System-wide Student Conduct Code (EP 7.208). Examples include: fabrication, facilitation, cheating, plagiarism, and use of improper materials. Any incident of suspected academic dishonesty will be reported to the Office of Student Conduct for review and possible adjudication. Additionally, the instructor may take action in regards to the grade for the deliverable or course as they see fit.

Office of Title IX: (808) 956-2299 | t9uhm@hawaii.edu | <https://manoa.hawaii.edu/titleix/>

Department of Public Safety: (808)956-6911 (Emergency) | (808)956-8211 (Non-Emergency) | <http://manoa.hawaii.edu/dps/>

UH System Basic Needs include food and housing, childcare, mental health, financial resources and transportation, among others. Student basic needs security is critical for ensuring strong academic performance, persistence and graduation and overall student well being. If you or someone you know are experiencing basic needs insecurity, please see the following resources: <https://www.hawaii.edu/student-basic-needs/resources/manoa/>

III. Course Content and Learning Objectives

*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 relation to other core sciences, to explain complex phenomena in geology and geophysics.

III. Course assignments and grading

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	'A'ā and Pāhoehoe Lava Flows, Dikes	Macdonald et al. (1983: 6-11, 21-37) , Hazlett & Hyndman (1996: 24-31)	1,5
2b	Climate Change	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) , Kahā'ulelio (2006)	1,5
4a	Stone Implements in Olden Days	Hiroa (1957 – pictures only) , Kāne (1997: 50-95)	1
4b	Stone Use in Modern Hawai'i	Leidmann (1996) , Cheever & Cheever (2005) , Simon (2005)	1
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	Boyd (1923) , HawaiianStyle (2007) , Kapaemahu	1, 5
6a	Pele, Hi'iaka, Keoūa, and Keanakāko'i	Emerson (1915: 162-216) , Westervelt (1916: 126-145) , Kāne (1996) , Ho'ulumāhiehie/Nogelmeier (2006) , Swanson (2008) , Swanson & Rausch (2008) , Williams (2009) , Pele Searches for a Home 'Ōiwi TV	1,3,5
6b	Making Stone Implements	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	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
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
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	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
14a	Introduction to Hawai'i Soils	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	Chipperfield & Harrison (2000) , Michaels (2001) , Allen (2004) , Field (2005) , WorldView (2005)	1,3,5
16a	Final Project		1,5
16b	Soil and Dryland Farming on Kohala	Hazlett & Hyndman (1996: 36-49) , Vitousek et al. (2004)	1,3,5
17	FINAL EXAM		

In order to master the material in this course you should complete all reading assignments, review all lectures, and complete the assigned field trips. You will demonstrate your understanding of the course material through 2 exams and a final project. Your final project will be a 2 slide, 2 minute oral presentation that describes a culturally important place in Hawai'i or a

Pacific Island. You will explain in your presentation how the geological and geophysical characteristics of that place have affected local society, and culture.

Your grade will be based upon the following:

1 mid-term (25%)

1 non-cumulative final (25%)

2 field trips (12.5% each)

Final project (12.5%)