



UNIVERSITY of HAWAII®
WINDWARD
COMMUNITY COLLEGE

ERTH 103, GEOLOGY OF THE HAWAIIAN ISLANDS

3 Credits (CRN [64234](#))
Online

INSTRUCTOR: Dr. Arjun Aryal

OFFICE: Hale Imiloa 113

OFFICE HOURS: T 11:00 AM to 12:00 PM, via Zoom, see announcement for zoom ID

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EFFECTIVE DATE: Spring 2023

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide the Ko'olau region of O'ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Hawaiian geology and geological processes: origin of Hawaiian Islands, volcanism, rocks and minerals, landforms, stream and coastal processes, landslides, earthquakes and tsunamis, ground water, geological and environmental hazards. Field trips arranged. (3 hrs. lect.) WCC:DP

STUDENT LEARNING OUTCOMES

As a result of taking this course, students can expect to attain the following outcomes:

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.

COURSE TASKS

Weekly study guide or ‘roadmap’: Please check Laulima portal /Resources/Week# for a weekly ‘roadmap’. This study guide will describe your course resources, assignments, and expectations for the corresponding week.

Weekly zoom meeting: There will be one zoom meeting (office hour) every week during office hours, T 11:00 AM-12:00 PM. But if this does not work for you, a separate arrangement can be made. All the materials will be available online to complete the course asynchronously.

Online discussions/Lab visit: Students are required to access Laulima frequently (at least once a week), check emails, announcements, and discussions regularly. Students are highly encouraged to visit the Geology lab at WCC but it will depend on COVID-19 situation and guidelines. Usually I am at WCC on Fridays. Please contact me for in-person meeting or lab visit.

Homework and Quiz: There will be a weekly quiz and/or homework. They will be available on Mondays and due Saturdays (mid-night).

Midterm and Final: There will be one midterm exam and a final exam. Most of the questions will be in multiple-choice format. Exams will be in Laulima.

Project: Writing an article related to the geology of Hawai‘i is required. Suggested topics will be given but students are encouraged to find their own project title. When possible, it is highly encouraged that your writing will compare the geologic process/event/feature to the Hawaiian explanation (or myth or legend). Specific instructions about your project work will be provided later. I highly encourage you to write a newspaper or magazine type article and submit it for publishing

Grading: Grading will be based on following points distribution

Quiz	20%
Homework	20%
Midterm exam	20%
Project (one)	20%
Final exam	20%

Online Discussion/Office hour visits 5% (extra credit)

Letter Grade Breakdown: A = 90%+; B = 80 – 89%; C = 70 – 79%; D = 60 – 69%; F = < 60%

Please check your gradebook in Laulima regularly.

Make-Up Exams/Early Exams: Midterm and Finals will be available for a couple of days and therefore there will be no Make-up exams unless there is a very legitimate reason such as illness or family emergency. Please contact me as soon as possible if such a situation arises. Note: make-up and/or early exams might be essay format and may be substantially more time-consuming.

COURSE CONTENT

Concepts or Topics and Schedule (Tentative):

Please check weekly 'roadmap' at /Resources/Week# folder in Laulima for more details.

Week #, Week of	Topic(s)
1, Jan 10	Setting the stage, Introduction to Geology, Earth Layers
2, Jan 17	Plate Tectonics, Minerals, Rocks and Rock Cycle, Formation of Hawaiian Islands or the island chain
3, Jan 24	Life Stages of Hawaiian Volcanoes, Calderas and Rift Zones, Lō'īhi
4, Jan 31	Kīlauea and recent eruptions in Big Island, and Mauna Loa
5, Feb 7	Earthquakes, Tsunami
6, Feb 14	Hawaiian Eruption Styles, 'A'ā and Pāhoehoe lava, Lava flows, Vents and pyroclasts,
7, Feb 21	Mauna Kea, Glaciers, Hualālai, Project overview
8, Feb 28	Kohala, Soil Formation, Streams, Water Erosion, ET Volcanoes
9, Mar 7	Midterm and Project Stage I due,
Mar 14	SPRING RECESS
10, Mar 21	East Maui, Haleakalā, West Maui and Rejuvenation
11, Mar 28	Lāna'i and Kaho'olawe, East and West Moloka'I, Aeolian Processes
12, Apr 4	O'ahu (Ko'olau and Wai'anae), Giant Avalanches and Submarine Geology
13, Apr 11	Kaua'i, Ni'ihau, Papahānaumokuākea
14, Apr 18	Groundwater Hydrology, Shorelines and Sea Level
15, Apr 25	Climate Change Adaptation, Project submission (Due Dec 3)
16, May 2	Review
17, May 9	Final Exam

LEARNING RESOURCES

Course Website: <https://laulima.hawaii.edu/portal>

Textbook: There is no particular textbook for this course and all the required study materials will be provided in Laulima.

Reference book: Only for your reference, Book chapters in PDF format will be available in Laulima/Resources.

Roadside Geology of Hawai'i (Hazlett & Hyndman, 1996, Mountain Press Publishing Company, ISBN-10: 0878423443, ISBN-13: 978-0878423446).

There is a newer version of this, I will request copies to your library |

ADDITIONAL INFORMATION

General Description of the Course:

"Civilization exists by geological consent, subject to change without notice." [Will Durant, American historian]

Wondering about if Kilauea's recent summit and rift zone activities are pau or paused? And what is the science behind Hawaii's 'Smiley Face' Volcano? What does the discovery of a hot water lake at the Halemaumau crater and that apparently turned into a lava lake mean? Or, would you like to know how the mountains, valleys, craters, beaches, reefs, etc. formed in Hawaii? What processes shaped them into what they are today? What processes provide for, and threaten, our resources and our safety, and how Hawaiians in the olden days manage to use these resources without modern materials? EARTH103 is a start to your understanding of these things.



ERTH103 introduces Hawai'i Nei geologically. It surveys Hawaiian geology and geologic processes. Includes origin of the Hawaiian Islands, volcanism, rocks and minerals, landforms, stream and coastal processes, landslides, earthquakes and tsunamis, groundwater, geologic and environmental hazards.

In this course, we will interleave geologic processes and places, starting from Lō'ihi (the youngest Hawaiian volcano) and moving NW along the chain to finish at Meiji seamount (the oldest Hawaiian volcano). We will cover processes along the way as we need them. For example, Kilauea is an active volcano, so we'll have to cover how magma is produced there. However, erosion only becomes a major geological process once a volcano starts to die off, so we won't cover it until we get to Mauna Kea and Kohala, and so on. The goal is that by the end of the semester you will be able to look at the entire Hawaiian-Emperor volcanic chain and understand how it got there, why it is not the same all along the chain, and what the geologic future may hold.

In EARTH103, as in all your classes, the important thing is not what I teach you, but what you learn. Learning is an active process – you have to do something to learn. In this class, reviewing online materials, doing homework/quiz and reading are very important. |

DISABILITIES ACCOMMODATIONS

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Accessibility Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at (808) 235-7448, royinouy@hawaii.edu, or you may stop by Hale Kāko‘o 106 for more information.

SEX DISCRIMINATION AND GENDER-BASED VIOLENCE RESOURCES (TITLE IX)

Windward Community College 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, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

Jojo Miller, Confidential Advocate
Phone: (808) 348-0663
Email: advocate@hawaii.edu
Office: Hale Kāko‘o 110

Desrae Kahale, Mental Health Counselor & Confidential Resource
Phone: (808) 235-7393
Email: dkahale3@hawaii.edu
Office: Hale Kāko‘o 101

Karla K. Silva-Park, Title IX Coordinator
Phone: (808) 235-7468
Email: karlas@hawaii.edu
Office: Hale Kāko‘o 128

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My 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.

For more information regarding sex discrimination and gender-based violence, the University’s Title IX resources and the University’s Policy, Interim EP 1.204, go to manoa.hawaii.edu/titleix/

ACADEMIC INTEGRITY

Work submitted by a student must be the student’s own work. The work of others should be explicitly marked, such as through use of quotes or summarizing with reference to the original author.

In this class, students who commit academic dishonesty, cheating or plagiarism will have the following consequence(s):

Students will receive a failing grade for plagiarized assignments.

All cases of academic dishonesty are referred to the Vice Chancellor for Student Affairs.

ALTERNATE CONTACT INFORMATION

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

- Location: Alaka'i 121
- Phone: (808) 235-7422