

## **ERTH135    Natural Disasters and Human History**

**INSTRUCTOR:**            **Jasper Konter**  
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**Office Hours:**         **TBA and by appointment**  
                                  (send me an email or talk to me to schedule  
                                  a convenient time)  
**Class Times:**            **Tuesday-Thursday 9:00 – 10:15 am (POST 723 or Zoom)**

We live on an active dynamic planet. Human history has been determined mainly by the activities of humans, but it is not completely divorced from natural processes. In this course, we will explore how a variety of geologic events and environments have influenced human history from pre-historic times up to the present. We will analyze the social, cultural and economic effects of various disasters that led to significant changes in societies in Africa, the Americas, Asia, Europe and Oceania.

This course will use a mix of lecture and hands-on learning through group projects. After outlining the hazards associated with various geologic processes, we will investigate historical examples and how different societies have reacted to, and changed because of, these natural disasters.

Following a week of introduction to how our dynamic planet works and how this dynamism results in sometimes-hazardous conditions, the semester will be divided into 4 modules dedicated to volcanism, earthquakes, tsunamis, and floods. Each module will consist of 7 classes, and start with an introduction to the particular hazard (class 1 and part of class 2). At the end of class 2 the group project for that particular module will be assigned. Class 3 will present case studies of the particular hazard, including their cultural and historical effects. In class 4, the student groups will present their preliminary results to the class, with feedback and discussion from fellow students and the instructor. Class 5 and class 6 will be the final presentations from the student groups, augmented by additional case studies (as time permits), and Class 7 will consist of an exam.

### **Course grading:**

Exam (15% for each topic/block exam, total for all 4 exams: 60%)

Course attendance and participation (40%) – consists of half (20%) for participation in class discussions and presentations (in-person or Zoom, as permitted by Covid), and half (20%) for “clicker” participation.

NOTE: we will be using free smartphone software as our “clickers”, not the physical “clicker remotes”.

## ***Tentative Schedule***

Jan 12 – Intro., Earth Structure, Plate Tectonics I

Jan 14 – Plate Tectonics II: Plate boundaries

Jan 19 – Volcanism I: Magma generation and volcanic eruptions

Jan 21 – Volcanism II: Volcanic hazards, assign group project 1 (effects of Tambora)

Jan 26 – Volcanism III: Historical effects (Toba 73K BCE; Santorini ~1600 BCE; Vesuvius 79 CE)

Jan 28 – Volcanism IV: Preliminary presentations, discussion of preliminary results

Feb 2 – Volcanism V: Hawaiian eruptions (‘Ailā‘au and Keanakāko‘i eruptions and connections to epic Hi‘iaka story, current eruption and Pāhoā); 20<sup>th</sup> century eruptions in Hawai‘i and Italy, Gas disasters in Cameroon. Start Project 1 student presentations

Feb 4 – Volcanism VI: Project 1 student presentations

Feb 9 – Volcanism VII: First exam

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Feb 11 – Earthquakes I: Causes, measurement, location

Feb 16 – Earthquakes II: Hazards, assign group project 2 (earthquakes from 1800-1950)

Feb 18 – Earthquakes III: 1868 Ka‘ū M<sub>w</sub> 8.0(?)

Feb 23 – Earthquakes IV: Preliminary presentations, discussion of preliminary results

Feb 25 – Earthquakes V: Earthquakes in China, prehistoric to recent, 2010 Haiti (poverty and corruption) and Europe (Lisbon). Begin student presentations

Mar 2 – Earthquakes VI: Project 2 student presentations

Mar 4 – Earthquakes VII: Second Exam

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Mar 9 – Tsunami I: Generation and propagation

Mar 11 – Tsunami II: Hazards

Assign group project 3 (the 1960 tsunami around the Pacific)

### ***March 15-19: SPRING BREAK***

Mar 23 – Tsunami III: 2004 Indian Ocean, 2011 Tohoku

Mar 25 – Tsunami IV: Preliminary presentations, discussion of preliminary results.

Mar 30 – Tsunami V: 1868, 1946 and 1975 Tsunami in Hawai‘i, Eastern Mediterranean (365 CE) and Lisbon (1755). Begin student presentations

Apr 1 – Tsunami VI: Project 3 student presentations

Apr 6 – Tsunami VII: Third Exam

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Apr 8 – Floods I: Causes, measurement

Apr 13 – Floods II: Opening of Bosphorus = Noah’s flood?

Assign group project 4 (flood cases)

Apr 15 – Floods III: Chinese floods in ~2200-2000 BCE and effects on dynasties

Apr 20 – Floods IV: Preliminary presentations, discussion of preliminary results

Apr 22 – Floods V: Holland: ~823- present, with emphasis on the 1421 St. Elizabeth Flood, Louisiana flooding in 1927 (Mississippi River) and 2005 (Katrina). Begin student presentations

Apr 27 – Floods VI: Project 4 student presentations –NOTE related exam during finals week

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Apr 29 – Case studies of additional types of natural hazards and their impacts

May 4 – Overview of the semester – discussion on likely hazards and impacts in Hawaii, evaluations.

***Non-cumulative Final Exam (during Finals Week)***

## ***Admin Stuff:***

The **Department of Earth Sciences** has established the following undergraduate student learning objectives for introductory courses such as Earth Sciences 135:

Students can explain the relevance of earth science 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.

*The focus of this class on specific Earth science-related hazards will lay out the processes that may represent natural hazards, and their impact on people and their cultures, world-wide.*

Students use the scientific method to define, critically analyze, and solve a problem in earth science.

*The students will work in groups to research particular events, what caused them, and how the event affected humans.*

Students can reconstruct, clearly and ethically, geological knowledge in both oral presentations and written reports.

*The presentation component of the class will help build oral presentation skills.*

In addition, as a UH General Education Foundations course, the following student learning objective applies:

Students can analyze the development of human societies and their cultural traditions through time in different regions (including Africa, the Americas, Asia, Europe, and Oceania) and using multiple perspectives.

*The class topics are broken up in such a way that natural hazards and their impacts will be studied across the world and through history.*

**Textbook:** We will not be using a single specific textbook, and instead rely on reading materials across a broad range of sources.

Please review the UH Mānoa **Student Conduct Code** at:

[http://www.studentaffairs.manoa.hawaii.edu/policies/conduct\\_code/](http://www.studentaffairs.manoa.hawaii.edu/policies/conduct_code/)

A key line in the Code says, “**The University expects students to maintain standards of personal integrity that are in harmony with the educational goals of the institution; to respect the rights, privileges, and property of others; and to observe national, state, and local laws and University regulations.**”

**The code also outlines the serious penalties for violations, so please do not violate the code. Academic dishonesty will be reported, and any exams or assignments affected by dishonesty will receive “0” credit and cannot not be retaken.**

## **Make-Up Exams/Early Exams**

Make-up exams will only be given when a student misses the exam for a legitimate reason such as illness or family emergency (a doctor's note is required in the case of illness, or family emergencies). Please contact me as soon as possible if such a situation arises. Anyone with official UH-sponsored event conflicts (e.g. UH

sports teams) must provide at least 2 weeks notice with appropriate signed paperwork. Note that make-up and/or early exams may be essay format, instead of multiple choice exams otherwise conducted.

### **Students with Disabilities:**

The Earth Sciences Department will make every effort to assist those with disability and related access needs. For confidential services, please contact the Office for Students with Disabilities (known as “Kokua”) located in the Queen Lili'uokalani Center for Student Services (Room 013): KOKUA Program; 2600 Campus Road; Honolulu, Hawaii 96822. Voice: 956-7511; Email: kokua@hawaii.edu; URL: www.hawaii.edu/kokua

### **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) 956-2299, [t9uhm@hawaii.edu](mailto:t9uhm@hawaii.edu).