GG420/620 - Beaches, Reefs, and Climate Change: Coastal Geology

POST 723 - T, Th 1:30 ~ 2:45 pm
Dr. Chip Fletcher, POST 802a, 294-0386, fletcher@soest.hawaii.edu

Office hrs: usually after class, and most days 5-6pm. Best to set up a meeting by email, or text my phone, or walk in and try any time. Students in GG620 will be held to a high standard in all aspects of the course, especially class participation. You will provide reviews of selected papers I will require and take a different test on exam days.


#### Week 1
- **Jan 8** Global Warming
- **Jan 15** More Global Warming
- **Jan 22** Yet more Global Warming
- **Jan 29** Paleoclimate
- **Feb 5** Paleoclimate
- **Feb 10** Kaena Point Field Trip Groups 1) Kaena Std; 2) Waimanalo Std, 3) Eolianite or Cultural History or Management
- **Feb 12** Coastal Environments
- **Feb 19** Coastal Environments
- **Feb 26** Coastal Management in Hawai‘i

#### Week 2
- **Mar 5** Exam I
- **Mar 10** Goat Island Field Trip Groups 1) Carbonate sand composition/age; 2) How is beach rock made? 3) Invasive species
- **Mar 19** Spring Break
- **Mar 26** Reefs
- **Apr 2** Reefs
- **Apr 9** Coastal Hazards
- **Apr 14** Kailua Bay Field Trip - Groups 1) Volcanology; 2) Reef ecology 3) Tourism in Hawaii
- **Apr 16** Coastal Hazards
- **Apr 23** Wrap-up
- **Apr 30** Review – May2 - Final Exam

#### Exams
- 2 exams 40% each.

#### Projects
- 2 projects, 10% each

- This course includes physically demanding field trips, if you are not comfortable wading and kayaking in the ocean or hiking, it's ok to skip these.

- **Projects**: Report on a paper (10 mins); Calculate your Carbon Footprint, walk us thru the process (10 mins); Give report on Field Trip: Managing invasive coastal species, carbonate sand composition, limestones of Hawai‘i, cultural history of coastal environments, reef ecology; fishery management in Hawai‘i; IPCC 1.5C report; 4thNCA v. I and v.II; give a news of the day.

- **Participation, Attendance, Attitude** This will be factored into your grade.


- **Readings**: There will be assigned readings.

- **Some Websites** (borrowed from Mark Hixon)
  - Carbon Brief: https://www.carbonbrief.org/
  - Center for Climate and Energy Solutions: https://www.c2es.org/
  - Climate Central: http://www.climatecentral.org/
  - Climate Change Impacts in Hawai‘i: http://seagrant.soest.hawaii.edu/climate-change-impacts-in-hawaii/
  - Climate Denial Crock of the Week: http://www.youtube.com/user/greenman3610
  - Climate Interactive: https://www.climateinteractive.org/
  - Global Warming Photos: http://www.worldviewofglobalwarming.org/
  - Hawai‘i Climate Adaptation Portal: http://climateadaptation.hawaii.gov/
  - UH Mānoa SOEST on Climate: https://www.soest.hawaii.edu/soestwp/research/themes/climate/
  - Intergovernmental Panel on Climate Change: http://www.ipcc.ch/
  - NASA on Climate: https://www.nasa.gov/subject/3127/climate/
  - NOAA’s Climate.gov: https://www.climate.gov/#climateWatch
  - Real Climate: http://www.realclimate.org/
  - Skeptical Science: http://www.skepticalscience.com (also available as a free smartphone app)
  - Smithsonian’s Forces of Change: http://forces.si.edu/index.html
  - Grist’s How to Talk to a Climate Skeptic: http://www.grist.org/article/series/skeptics/
  - Union of Concerned Scientists on Global Warming: http://www.ucsusa.org/global_warming/
  - United Nations Environment Program on Climate Change: http://www.unep.org/climatechange/
  - U.S. Global Change Research Program: https://www.globalchange.gov/health-assessment
  - Yale Program on Climate Change Communication: http://climatecommunication.yale.edu/
Department Learning Objectives
The Department of Geology and Geophysics has established the following undergraduate student learning objectives.

- 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.
- Students can apply technical knowledge of relevant computer applications, laboratory methods, and field methods to solve real-world problems in geology and geophysics.
- Students use the scientific method to define, critically analyze, and solve a problem in earth science.
- Students can reconstruct, clearly and ethically, geological knowledge in both oral presentations and written reports.
- 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.

Sexual Harassment
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 (including me) 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 (and see below).
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; or contact me and I will take you to the Title IX office.

Confidential Reporting
University of Hawaii students, faculty and staff have an important resource to confidentially report violations of laws, rules, regulations and UH policies. A whistleblower hotline launched in June 2016 further advances the university’s commitment to encourage and enable any member of UH or the general public to make good faith reports of misconduct.

UH Whistleblower Hotline: 1-855-874-2849
For more information go to UH News at http://go.hawaii.edu/coj