Course information
Lecture: Tues/Thurs. 12:00 - 1:15 PM  POST 723
Course Reference Number: TBA
Class website: TBA

Instructor
Bridget Smith-Konter  brkonter@hawaii.edu
POST 819D  Office hours: TBA

Required eText: Physical Geology: The Science of Earth
(2nd Edition, 2014), C. Fletcher
Purchase your eText on-line at WileyPLUS

Optional - If you want a hard copy, pick up the “Binder-ready” version of the text at the bookstore.

Why Take This Course?
This course will provide you with a new view of the world. For the rest of your life you will carry a special perspective that only an understanding of geology can provide. A geology course can make you a better member of your community because you will understand your home planet, you will know how to avoid natural hazards, you will know how to sustain natural resources, you will understand that global warming is real, you will become an informed voter, and you will improve your critical thinking skills.

Tentative Course Schedule (*subject to change)

<table>
<thead>
<tr>
<th>Week</th>
<th>Reading</th>
<th>Weekly Topic</th>
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<tbody>
<tr>
<td>Aug 24</td>
<td>1, 2, 3</td>
<td>What is the origin of Earth and the solar system?</td>
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<tr>
<td>Aug 31</td>
<td>3, 4</td>
<td>What is plate tectonics?</td>
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<tr>
<td>Sept 7</td>
<td>4, 5, 6</td>
<td>What is the origin of rocks and minerals? Where do metals come from?</td>
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<td>Sept 14</td>
<td>6</td>
<td>What creates volcanoes? What is the origin of the Hawaiian Islands?</td>
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<tr>
<td>Sept 21</td>
<td>7, 8</td>
<td>Where does soil come from? What is sediment?</td>
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<td>Sept 28</td>
<td>9, 10</td>
<td>How do rocks over time? Where does oil come from?</td>
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<tr>
<td>Oct 5</td>
<td>11</td>
<td>How are mountains built and how are they related to plate tectonics?</td>
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<tr>
<td>Oct 12</td>
<td>11</td>
<td>What is an earthquake?</td>
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<tr>
<td>Oct 16-18</td>
<td></td>
<td>Big Island Field Trip to Hilo and Volcano National Park. $130 + buy your own ticket.</td>
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Oct 19  12, 13,  How do we know Earth’s age or Earth’s history?
Oct 26  14     How is climate change impacting Hawaii and how do we know humans are the cause?
Nov 2   15     How do glaciers work and what are ice ages?
Nov 9   17     Where do we get freshwater? What are the environmental problems affecting Hawaii?
Nov 16  18     Where is groundwater found and how do we use it?
Nov 23  20, 21 What is coastal erosion, how do we manage beaches? What is ocean acidification?
Nov 30  20, 21 What geologic processes and products characterize the oceans?
Dec 7   Review
Course Policies and Information

Course Grades
Course grades will be based on homework (30%), iClicker participation (20%), 2 midterm exams (15% each), and a final exam (20%). Extra credit earned throughout the semester will be added on to your cumulative grade.

Tips for success
- **Lectures:** Attend every lecture, as they are the key to your success in this course. Some aspects of the course material will be covered in more detail in class than is provided the text, so it is highly recommended that you not only bring your body to class, but your mind and your concentration as well!
- **Homeworks:** Do each homework assignment, and submit each one on time. Homework assignments help you learn the material and are a great study guide for the exams.
- **Exams:** Do not miss an exam. Study. Read. Review.
- **Questions:** Questions are welcome and encouraged. Your questions are likely to help other students as well, so you should never feel intimidated to ask questions about course material.
- **Read:** Your course textbook will reinforce lecture material, so complete each reading assignment. Read each week to keep up with course notes.

Student Learning Objectives
This course will aim to meet the following undergraduate student learning objectives, as established by the Department of Geology & Geophysics:

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.

Student Conduct and Academic Integrity:
University guidelines for acceptable student conduct are very specific and will be strictly followed. Please read the guidelines (http://www.catalog.hawaii.edu/about-uh/campus-policies1.htm) and contact your instructors if you have any concerns.

- Cheating, of any form, will not be tolerated.
- Blind copying of intellectual material (text) from resources such as books, journals, and the internet is plagiarism and is illegal. Instead, you should write things in your own words with a proper reference to your source. If any homework exercises require you to look up an answer in something else than the class textbook, I will expect you to reference the source and write it in your own words. Any plagiarized work will receive “0” for the whole assignment and cannot be re-done or made up.

Disability Access
The Geology and Geophysics 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@hawaii.edu www.hawaii.edu/kokua
Geology and You

Earth is the product of billions of years during which geologic processes have carved the land, mixed the seas and air, and shifted the continents—and continue to do so.

All life on Earth is the product of natural selection. Preserving biodiversity and natural habitats is critical to the continuation of Earth’s natural resources. Natural resources are geologically renewed but humans use resources faster than they can be naturally renewed. Today humans use 1.5 Earths; that is, the resources we use in 1 year, will take 1.5 years to replace. In the U.S. we use 5 Earths. This is not sustainable.

To ensure that heavily used resources are still here for future generations means that we must ultimately find alternative resources, augment the rate of natural renewal, or reduce our rate of consumption (or all the above). This is can lead to sustainability.

Regardless of your lifework, the science of geology can provide you with a level of awareness that will serve you in your career, your personal life, and your role as a community member of planet Earth. Here are 5 “Enduring Understandings” of geology that serve as semester-long learning goals.

1. The study of Earth encompasses a vast range of time and space. Geologists study nature from the length of the Solar System (trillions of kilometers) to the bonding of atoms (0.00000001 centimeters). We stretch our minds to understand the megascopic to the microscopic. Massive planets are constructed of the smallest minerals. Eons of time consist of long periods of slow and gradual change punctuated by short intervals of sudden violent convulsions in nature (i.e., earthquakes, floods, landslides). This immense span of time and space is one of the fundamental characteristics of the geological sciences.

2. Plate tectonics controls the geology of Earth’s surface. The theory of plate tectonics has far reaching implications for the organization of the planet and its history. As plates move they perpetually change the way our planet looks. Mountain ranges rise when plates collide only to be worn by erosion down to the sea. Ocean basins open and close as continents rift and collide again. Nearly every aspect of geology is related to how plates interact and change through time.

3. Geologic systems are the product of interactions between solid Earth, oceans, atmosphere, and living organisms. Earth is organized into overlapping geologic systems that influence and react to each other. Geologic systems consist of interdependent materials (such as rocks, sediments, organic compounds, and water) that interact with natural physical and chemical processes. In a broad sense, these interactions occur because solar energy, geothermal energy, and gravitational energy are at work mixing the air, ocean, and solid Earth.

4. Change is ever present and accumulates over vast time. Humans are powerful agents of change. You live upon an ancient and restless landscape that is changing under your feet. All forms of life have evolved partially in response to geologic change over time. Today’s Earth is the product of both gradual and instantaneous change accumulating over 4.6 billion years. Hence, our planet looked very different in the past and it will look different in the future.

5. Rocks and sediments are pages in the book of Earth history. Geologists read the story of Earth history in the crust. Earth history teaches us that Earth is very old, that evolution is responsible for life’s incredible diversity, that ever-present change is a characteristic of geologic systems, and that geologic processes operate on an immense stage of time and space.