

## ERTH 639 Stable Isotope Biogeochemistry

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This course will be entirely online unless the situation with COVID changes dramatically. All lectures will be asynchronous video recordings available through Laulima. When possible we will have synchronous meetings on Zoom to discuss lectures and homework assignments. However, the extent this will happen between 15 February and 1 April will be limited because I will be at sea and synchronous meetings on Zoom may not be possible because of the bandwidth on the ship. Expect to watch about 2.5 hours of lectures each week and complete homework assignments (readings and homework questions). There also will be class projects and a take-home final exam.

Week	Dates	Topic
1	January 11-15	Introduction – why isotope analyses, terminology, nucleosynthesis
2	January 19-22	Introduction – isotope fractionation, mixing, diffusion
3	January 25-29	Introduction – mass spectrometry, precision, accuracy, QAQC
4	February 1-5	Water cycle, water in plants and soil
5	February 8-12	Water in biology, water in ecosystems
6	February 16-19	Carbon in plants, tree rings and stable isotopes
7	February 22-26	Carbon cycle, soil biogeochemistry
8	March 1-5	Nitrogen in plants, Urban isotope ecology, stable isotopes and food
9	March 8-12	C, N and S in animals and their hair and teeth
10	March 15-19	<b><i>Spring Break</i></b>
11	March 22-25	Paleosols, paleoecology, C, N and O in the ocean, paleoclimatology
12	March 29 – April 2	Carbonates and clumped isotopes
13	April 5-9	Carbon isotope fractionation in microalgae, ocean nitrogen cycling
14	April 12-16	Nitrogen fixation in the ocean, ocean uptake of CO <sub>2</sub>
15	April 19-23	Food webs and amino acid isotopic compositions
16	April 26 -30	More amino acid isotopic compositions, N <sub>2</sub> O in the ocean
17	May 3-5	Biomarkers

### **Take Home Exam (due Tuesday May 12, 2021 at 14:00)**

Grading: Grades will be determined based on performance on a final comprehensive take home exam, answers to homework problem sets, class projects and course participation. Class projects will involve interpretation of data and writing a succinct report in the style of a short research paper (Introduction, Methods, Results, Discussion, Conclusions, and References).

### Disability Access:

If you have a disability and related access needs the Department will make every effort to assist and support you. For confidential services students are encouraged to contact the Office for Students with Disabilities (known as “Kokua”) located on the ground floor (Room 013) of the Queen Lili'uokalani Center for Student Services:

KOKUA Program  
2600 Campus Road  
Honolulu, Hawaii 96822

Office hours 7:45 AM – 4:30 PM

Voice: 956-7511

Email: [kokua@hawaii.edu](mailto:kokua@hawaii.edu)

URL: <[www.hawaii.edu/kokua](http://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).