

ERTH608 – Isotope and Trace Elements Fall 2021

Instructor: Ken Rubin Day, Time: Tu-Th TR 1030-1145a, POST 613 and ZOOM
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Course Content: This class reviews the principles of elemental and isotopic fractionation, and radioactive decays and ingrowth as displayed in Earth Materials, and their application to Earth Processes.

Course Format: This is a seminar course. After a few introductory lectures, participants will read and discuss research papers and textbook chapters. This semester it will be offered hybrid, with some sessions online and some sessions in person (but participants can still zoom in on those days). The plan is to meet once per week to discuss relevant background and once per week to discuss one or two papers. Initially the instructor will lead the discussions but by mid-semester course enrollees will also lead discussions. The format will be conversational and as informal as possible to encourage participation and lots of questions/discussion during class.

Grading: Grading will be based on class participation and student-led discussions.

Topics: We will discuss aspects of the following (not necessarily in this exact order), leaving room to focus on topics of special interest to the group:

0. Elemental characteristics and radioactivity review
- I. The formation and “cosmic” abundance of elements and isotopes.
- II. Early Solar System History and Planetary accretion and differentiation
- III Igneous Systems
- IV. Mantle geochemistry
- V. Earth Surface processes
- VI Biological Systems
- VII. Geochronology

ERTH Student Learning Objectives (SLOs):

ERTH department has provisionally defined 4 and 5 learning objectives, respectively, for the MS and PhD graduate degree programs, relating to Technical knowledge, the conduct of science, Oral and written skills, and Professional skills. This course directly incorporates content relevant some of these:

M.S.

1. **Technical knowledge.** M.S. graduates are proficient in applying technical knowledge of theory, laboratory methods, field methods, computer applications, and the supporting disciplines (math, physics, chemistry, biology) to help advance the fields of geology and geophysics.

3. **Communicate geological knowledge** M.S. graduate are able to effectively communicate the findings of their research in writing at a level comparable to that of a scientific journal publication, and defend it orally to the satisfaction of a scientific audience. They are also able to communicate orally about Geology through seminar or conference presentations.

Ph.D.

1. **Technical knowledge.** Ph.D. graduates are proficient in applying technical knowledge of relevant theory, laboratory methods, field methods, computer applications, and the supporting disciplines (math, physics, chemistry, biology) to advance the fields of geology and geophysics.

2. **Expertise in a sub-discipline.** Ph.D. graduates are able to comprehensively synthesize, evaluate, and interpret relevant fundamental knowledge in her or his sub-discipline.

4. **Communicate geological knowledge** Ph.D. graduates are able to effectively communicate the findings of their research in writing at a level comparable to that of scientific journal publications, and defend it orally to the satisfaction of a scientific audience. They are also able

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to communicate orally about Geology through seminar or conference presentations.

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.