

Student Learning Outcome (SLO) Objectives of Required Courses for a Bachelor's degree in Earth Sciences

Student Learning Objectives (SLOs)

1. Students can explain the relevance of earth sciences 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, field methods, and the supporting disciplines (math, physics, chemistry, biology) to solve real-world problems in earth sciences.
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 earth sciences, including the fundamental tenets of the sub-disciplines, and their context in relationship to other core sciences, to explain complex phenomena in earth sciences.

Fill in each square according to the course objectives:
0=Negligible content of this topic/concept in the course
1=Introduce topics & concepts in order to provide awareness and instill curiosity, but there is negligible in-depth analysis or application.
2=Develop knowledge and capability though exploration, analysis, &/or application of topics & concepts.
3=Maturity—including proficiency, thorough knowledge, & good judgment—is achieved through in-depth exploration, analysis &/or application of topics/concepts.

| | 101 | 101L | 103 | 170 | 200 (W) | 250 | 301 | 302 (*W) | 303 | 304 | 450 | 305 (W) | 309 (*W) | 325 | 410 (O) |
|---|-----|------|-----|-----|---------|-----|-----|----------|-----|-----|-----|---------|----------|-----|---------|
| 1. Relevance | | | | | | | | | | | | | | | |
| 1a) Relevance of **ERTH to society & human needs, including Hawaii | 1,2 | 1 | 1 | 1 | 2 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 |
| 1b) Impact of **ERTH to understanding planet Earth | 1 | 1 | 1 | 1 | 2 | 0 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 |
| 2. Technical knowledge | | | | | | | | | | | | | | | |
| 2a) Application of supporting disciplines (math, physics, chemistry, biology) | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 |
| 2b) Computer applications | 0 | | | 0 | 1 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 0 | 0 | 1 |
| 2c) Laboratory methods | 0 | 1 | | 1 | 0 | 0 | 3 | 3 | 2 | 2 | 0 | 1 | 3 | 0 | 1 |
| 2d) Field methods | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 3 | 1 | 3 | 1 | 0 | 1 |
| 3. Scientific method | | | | | | | | | | | | | | | |
| 3a) Define a problem | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 2 |
| 3b) Critically analyze a problem | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 2 |
| 3c) Solve a problem | 0 | 1 | 1 | 1 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| 4. Communicate geological knowledge | | | | | | | | | | | | | | | |
| 4a) Oral communication | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 3 |
| 4b) Written communication | 0 | 1 | 1 | 1 | 2 | 2 | 0 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| 4c) Use scientific ethics | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | 0 | 2 |
| 5. Evaluate, interpret, summarize basic principles | | | | | | | | | | | | | | | |
| 5a) Understand basic tenets of **ERTH sub-disciplines | 1 | 1 | 1 | 1 | 2 | 0 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 |
| 5b) Understand relationships between **ERTH and other basic sciences | 1 | 1 | 1 | 1 | 2 | 0 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 |
| 5c) Explain complex **ERTH phenomena | 0 | 0 | 1 | 1 | 1 | 0 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 3 |

**ERTH= the subjects of earth sciences (not to the Dept. of Earth Sciences).

W=writing intensive focus, *W=sometimes but not always taught as writing intensive, O=oral focus;