

UNIVERSITY OF ALASKA FAIRBANKS

Geology and Geophysics, Undergraduate Program in Geoscience (B.S.)

Academic Outcomes Assessment Plan

**MISSION STATEMENT:** The Department of Geosciences educates all levels of students in geoscience principles through classroom and field-based instruction. The scholarly and research activities of the department enhance the educational program by stimulating inquiry and providing opportunities for the next generation of geoscientists to develop technical, analytical and practical skills through hands-on experiences.

**GOALS:** To prepare undergraduate students for careers or graduate studies in Geology, Paleontology, Geospatial Sciences, Geophysics, or related fields.

| <b>Intended Outcomes/Objectives</b>                                                                                                                                                                                                                   | <b>Assessment Criteria and Procedures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Implementation (what, when, who)</b>                                                                                                                                                                                                                                                                                                                                                                                            |
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| Upon completion of introductory courses (Geos 101 and 112), students will demonstrate understanding of basic geologic concepts, including: a) plate tectonics; b) geologic time; c) structure and composition of the Earth; and d) 3-D visualization. | Students will take a Geoscience Concept Inventory (GCI) before Geos 101 and after Geos 112 to assess learning gains or losses during the introductory sequence. Modification to instruction will target concepts that >30% students failed to grasp on the post-test and questions that reveal negative learning gains across the introductory sequence.                                                                                                                      | The GCI will be administered during the first Geos 101 class and repeated during the final Geos 101 exam and again during the final Geos 112 lab. Instructors will meet annually to discuss how to adjust instruction to address common misconceptions.                                                                                                                                                                            |
| Graduates will be able to apply the scientific method to geologic questions and demonstrate hands-on experience with geologic tools and techniques in the lab and/or in the field.                                                                    | <p>Students in the Geology, Geospatial and Paleontology concentrations will complete a field-based capstone course (Geos 351). Final projects will be evaluated with the capstone rubric. Student input and feedback is gathered and analyzed via an on-line survey.</p> <p>Students in the Geophysics Option will conduct at least 2 credits of undergraduate research (Geos 488). The final report, poster, or presentation will be evaluated with the capstone rubric.</p> | <p>Geos 351 (Field Geology) is offered alternate summers. 351 faculty will compile and review capstone project rubrics, discuss how deficiencies can be addressed within Geos 351 or prerequisite courses, and recommend program changes.</p> <p>Faculty advisors will fill out the "capstone" rubric and results will be compiled annually. Geophysics faculty will meet annually to discuss how to address any deficiencies.</p> |

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| <p>Graduates will demonstrate skills in written and oral communication consistent with professional standards.</p>                                                         | <p>Students will write multiple drafts of a research paper in core courses (Geos 315, Geos 483, and Geos 351). Final papers will be assessed with a course-specific rubric.</p> <p>Students will present results of research or experiments in oral and/or poster presentations for core courses (incl. Geos 112 and Geos 483). Oral presentations will be assessed with the "O" rubric.</p> | <p>Assessments of written and oral presentations will be compiled and reviewed annually by faculty teaching O and W courses.</p> |
| <p>Students seeking employment or continued education in geoscience or related fields will be employed or admitted to graduate programs within one year of graduation.</p> | <p>Graduates will complete an on-line exit survey designed and administered by the Dept. of Geosciences faculty and staff.</p>                                                                                                                                                                                                                                                               | <p>Survey results will be reviewed and discussed annually.</p>                                                                   |