



Academic Program Review

Program Name: Geoscience - Bachelor of Science

Academic Year 2025/2026

Recent Recommendations

Using your most recent review, please respond to all feedback and recommendations.

Response:

The main recommendation we received was to increase graduates. This we have accomplished. NSF-sponsored S-STEM scholarships for Geoscience majors are helping us to attract students, and the Geo Learning Community has increased retention through social and academic support.

Student Learning Outcomes

Describe the assessment of your student learning outcomes (SLOs). Discuss your findings, changes you are making, and what you hope to see as a result.

Response:

A. Understanding of Basic Geologic Concepts: Students take a customized Geoscience Concept Inventory (GCI, see supporting documents) at the beginning and end of Geos 101 and again after Geos 112 to assess learning gains throughout the introductory geoscience sequence (see Table 1). Scores show improvement across the sequence from Fall 2024 to Spring 2025. **B. Graduates Demonstrate Hands-on Experience with Geologic Tools and Techniques in the Lab and/or in the Field:** A capstone field mapping course (GEOS 351) is required for students in the Geology, Geospatial, and Paleontology concentrations. Course projects are evaluated with a rubric (see Table 2). Undergraduate research (GEOS 488) is the required capstone course for the Geophysics concentration. Student performance throughout the course is evaluated with a rubric (see Table 3). Results demonstrate that graduates are able to produce average to excellent field- and lab-based geoscience projects and perform at a level equal to field camp participants from other institutions. **C. Written and Oral Communication Skills Consistent with Professional Standards:** Papers and presentations in core classes are assessed with course-specific rubrics (see supporting documents for examples). Students show improvement throughout their degree program, with most students producing very good to excellent scores on written and oral presentation. **D. Students are Employed or Admitted to Graduate Programs within One Year of Graduation:** Graduating seniors are tracked by advisors and department staff. This is a substantial change to our previous assessment, which involved asking students to take the American Geological Institute (AGI) student exit survey. The reason for the change is that most students ignored the request and did not complete the survey. We are currently working to create an internal survey for program graduates as an alternative to the AGI exit survey, which came with a code that expired before many students tried to access it. Currently we have difficulty contacting students who are not members of the Geo Learning Community. Of the 15 students who graduated between Summer 2023 and Summer 2025, departmental tracking efforts indicate that four have entered graduate school, and live hold full- or part-time industry or agency positions. Three of the latter group are applying for admission to graduate schools in the coming year. This leaves six students unaccounted for. We hope that a customized, internal survey will elicit a greater response rate and facilitate tracking of graduates.

Did you make any curricular changes based on your most recent SLOA? If so, discuss what changes were made. If no changes were made, please discuss the strengths of your curriculum based on the assessment of your outcomes.

Response:

Faculty teaching 100-level courses have met to discuss the results of the GCI administered across the two-semester introductory sequence. The most problematic question is about glaciers and where they can be found. This question has multiple correct answers, and possible answers include common misconceptions. Therefore few students select all of the correct answers. We plan to address these results with minor changes to the GEOS 101 curriculum. The quality of the poster presentations submitted by teams of GEOS 112 students (see Table 4) and the final drafts of term papers submitted by GEOS 315 (see Table 5) and GEOS 483 (see Table 6) students indicate that they are mastering the writing, presentation, and teamwork skills these projects were designed to teach. Therefore we have no plans to change these aspects of the curriculum. In Summer 2024 and 2025, we experimented with the summer field mapping course by breaking the six-week, alternate-year course into two parts and delivering the curriculum over two consecutive summers. We found that this necessitated a refresher at the beginning of the second summer. Otherwise students continued to produce good to excellent work (see Table 2). Whereas we do not plan significant changes to our field mapping projects, we have been persuaded by the results of a student opinion survey to return to the alternate-year structure. Only three students in the Geophysics concentration completed the capstone course, GEOS 488, in the past two years (see Table 3). Two of these students were ranked excellent or very good in most or all categories. The third student was ranked poor in most categories because they stopped participating or responding after the first month. That student is repeating GEOS 488 this semester.

As of 2017, all Baccalaureate programs are required to embed communication outcomes within their SLOA Plans. This is optional for non-Baccalaureate programs.

Communication outcomes in the SLOA plan are: [Embedde](#)

Check the checkbox to certify completion of the following tasks:

☒ Upload supporting documents to the Supporting Documents folder. This includes artifacts, rubrics, and other documents related to your SLOA.

☒ Upload your most recent SLOA to the Supporting Documents folder, even if no changes have been made since the last review.

Have changes been made to your SLOA document since your last review? [Yes](#)

If so, please summarize what changes were made.

Response:

There are two main changes in our current SLOA: 1) GEOS 309 (Tectonics) is no longer taught as a writing-intensive course. GEOS 315, GEOS 483, and GEOS 351 continue to be writing-intensive courses within the major. 2) We are no longer asking that students complete an AGI exit survey, because of the abysmally low response rate. Instead, we will design and deliver a Google form on which graduating seniors can report their experiences and future plans.

High Impact Practices

Please indicate which high impact practices are currently being implemented in relation to the program's student learning outcomes.

- | | |
|--|---|
| ☒ Capstone Courses & Projects | ☐ Graduate Level Research |
| ☒ Collaborative Assignments & Projects | ☒ Writing-Intensive Courses |
| ☐ Diversity/Global Learning | ☐ Publications |
| ☐ ePortfolios | ☐ Communications |
| ☐ First-Year Seminars and Experiences | ☐ Scholarly Activities |
| ☐ Internships | ☐ Studios |
| ☒ Service or Community-Based Learning | ☐ Practicum |
| ☒ Undergraduate Research | ☐ Other |
| ☒ Labs | ☐ None of these |

Discuss how the HIPs in the program are reflected in the SLOA. If you have identified HIPs that are not included in the SLOA, please consider an update.

Response:

The capstone field course and capstone undergraduate research projects have a variety of lab-based courses as prerequisites. Both are assessed with rubrics (see Table 2 and Table 3). In Geos 112, students work in teams of three or four to investigate a topic of their choice and report their findings to the class in poster format. Posters are also assessed with a rubric (see Table 4 and Geos 112 Rubric), and members of each team provide feedback on the collaborative experience. Components of writing-intensive courses are also assessed with a rubric. In GEOS 315 and GEOS 483, students submit multiple drafts of a term paper or proposal; rubrics (see Geos 315 Rubric Paper and Geos 315 Rubric Final) are used to assess how scores change from the first to final draft (see Table 5 and Table 6). In Fall 2020 the Geosciences Department launched an NSF-funded Geo Learning Community (GeoLC) for BS Geoscience majors and minors. The GeoLC provided financial, academic, and social support in the form of scholarships, supplemental instruction for 100-level courses, a required weekly study hall, and optional social activities. Over five years the community has grown from a handful of students to >25 participants at all levels (freshmen - seniors). Anonymous student responses to feedback surveys at the end of each semester indicate that the community has helped attract and retain majors. Tracking indicates that 60% of the 15 students who graduated between Summer 2023 and Summer 2025 were GeoLC participants. While NSF funding for GeoLC scholarships expired at the end of the Fall 2024 semester, we have managed to continue GeoLC academic and social activities through internal grants. GeoLC members with unmet financial need currently receive financial support in the form of NSF S-STEM scholarships.

Student Success

Please reference the [Resources tab](#) for information on accessing the Student Success Data Dashboard and contacting your designated data liaisons.

Student Success Data Trends

Persistence: Increase

Pass Rates: Increase

Student Credit Hours: Increase

Majors: Increase

Degrees Awarded: Increase

Other Trends (if applicable):

The number of degrees awarded in fiscal year 2025 is three. Eight additional students graduated in Summer 2025 after completing a capstone field course (7 students) or calculus (1 student).

Achievement Disparities

Discuss any achievement disparities identified in your disaggregated student success data and explain how you plan to address them.

Response:

The disaggregated student data indicate that we are successfully closing the gap between [REDACTED] and [REDACTED] students, [REDACTED] and other students, [REDACTED] and [REDACTED], and [REDACTED], [REDACTED], and [REDACTED] students with respect to pass rates. This we attribute to academic support provided by the Geo Learning Community, particularly supplemental instruction.

Closing the Loop

Please discuss how your student learning outcomes are reflected in high impact practices and student success data.

Response:

I confess I'm confused by this question, as I believe that the high-impact practices are reflected in the student learning outcomes assessments and student success data. Department of Geosciences practices are closing achievement gaps on multiple fronts, increasing pass rates across the board, and improving student performance on assessment metrics.

Academic Program Profile

The following questions help show how your program supports the university's mission, connects with other UA programs, engages with the community, contributes through service courses, and supports student success after graduation. Please use this section to highlight the value your program brings to students, the university, and beyond.

UAF's Mission:

The University of Alaska Fairbanks is a Land, Sea, and Space Grant university and an international center for research, education, and the arts, emphasizing the circumpolar North and its diverse peoples. UAF integrates teaching, research, and public service as it educates students for active citizenship and prepares them for lifelong learning and careers.

In what ways does your program advance UAF's mission?

Response:

The BS Geoscience program successfully recruits and trains undergraduate students from communities throughout and beyond Alaska. High-impact practices are helping to close achievement gaps for [REDACTED], [REDACTED], and [REDACTED]. The opportunity to conduct field research in Alaska's natural geological laboratory or conduct laboratory analyses to further understanding of Arctic processes, landscapes, and natural resources is an effective recruiting tool for Geoscience majors. Capstone courses that involve undergraduate research or field mapping projects prepare students for success in graduate school and careers with state agencies or industries, particularly mining and exploration.

How is your program related to others in the UA system?

Response:

The Department of Geosciences provides training in Earth materials, structural geology, and sedimentology for students majoring in Geological Engineering. We teach a required course (GEOS 101) for the BS program in Climate and Environmental Change, and we designed the Earth Science concentration for students in that program. We are currently in discussions with the Department of Geological Sciences at UAA about coordinating outcomes and instruction for a cross-listed capstone field mapping course.

Who are your key community or external partners?

Response:

The Department of Geosciences works with partners in the oil and gas and mining industries, including ConocoPhillips, Hilcorp, Northern Star, and Kinross, to enhance student preparedness and provide pathways to internships and careers. GeoFORCE Alaska, a workforce development program for rural Alaskan high school students, is operated by the Dept. of Geosciences in partnership with industry sponsors, including Doyon, ASRC, and NANA.

What role do your services courses play, if any?

Response:

Previously we had separate service courses for Geological Engineering students, but currently those students take courses alongside Geoscience majors. This is because we no longer have enough faculty to offer separate service courses.

How do your graduates succeed after leaving the program?

Response:

27% of the students who have graduated in the past two years have been admitted to graduate programs at UAF. Another 27% hold full-time (20%) or part-time (7%) agency, industry, or lab technician positions. Previous graduates have found full-time positions in industry, working for ConocoPhillips, Northern Star, Kinross, and Doyon.

Submitter and Collaborator Names:

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Committee Review

Program Name: Geoscience – Bachelor of Science

Academic Year 2025/2026

Overall Recommendations

The college or school committees set the tone for helping each program feel seen during this process. We have provided you with feedback tags to attach to this program review. Please select as many as applicable.

- | | |
|--|--|
| ☒ Insufficient Narratives | ☐ Report Incomplete |
| ☒ Address Achievement Gap | ☐ Consider Curricular Revisions |
| ☐ Develop Online Offerings/Options | ☐ Improve Time to Degree |
| ☐ Increase Enrollment | ☐ Increase Graduates |
| ☐ Increase Retention/Persistence | ☐ Strengthen Advising Practices |
| ☐ May be asked to share Effective Practices | ☐ Recommendation to University-Wide Committee |

Explanation of Overall Recommendations

Response:

During the 2023 full-program review, the BS in Geoscience program was given a recommendation to increase the number of graduates. The program responded in this review by noting that they have accomplished this outcome through scholarships and increased retention. That is a great achievement, it would be great to hear more about the details associated with these initiatives and their specific impacts on enrollment growth. Provided feedback on the section on closing the loop and how to address that at the full-program review in 2027 (see SLOA Feedback Narrative below).

Student Learning Outcomes Feedback

- | | |
|---|--|
| ☐ Strong | ☐ Developing |
| ☒ Requires Minor Revision | ☐ Requires Major Revision |

Student Learning Outcomes Assessment Feedback

- | | |
|---|---|
| ☒ Strong Alignment with SLOA Plan | ☒ Clear, Concise Presentation of Findings |
| ☐ Compelling Learning Story | ☐ Missing a Direct Measure |
| ☐ Missing Active Verbs | ☐ Missing Curricular Connection |
| ☐ Missing Collaboration within Department | |

SLOA Feedback Narrative:

Provided 4 SLOs. SLO #s 1-3 are good, although they could be more clearly articulated/defined, (e.g., what written and oral communication skills are specifically consistent with professional standards?). SLO #4 is not a SLO and should be deleted or replaced; note that this is an important program outcome (tracking graduates and employment) and play an important role for program tracking but do not meet the criteria for SLOs. Per NWCCU, academic programs should have 3-6 SLOs; without SLO #4, the BS in Geoscience still meets this criterion and assess knowledge, skills, and/or abilities that students should attain by the time they graduate from the program. The assessment plan and implementation processes for each SLO were strong, with well-developed rubrics/artifacts for assessing each SLO. Provided evidence, both in the narrative and as additional documents in supporting documents folder, to document progress in addressing SLOs that demonstrated continuous improvement and closing the loop for the program.

Provided an overview of curricular changes that resulted from the program review/SLOA process. These changes documented how the issue was identified and resolved. If no change occurred, the reason was documented on why a curricular change was not made to the program.

For the question on Closing the Loop, it is a correct response that high-impact practices are reflected in the SLOs and student success data. What this section is requesting is to document that via narrative to articulate the relationship between the SLOs, HIPS, and student success outcomes (e.g., closing of achievement disparities, increasing course pass rates, and improving student performance on other key assessment metrics). Documenting continuous improvement and the closing of the loop are important components of the program review process, not just as an exercise, but to demonstrate that assessment results are used to make meaningful, evidence-based changes that enhance program quality and student learning. This process ensures accountability, fosters a culture of ongoing improvement, and provides clear evidence to accreditors and stakeholders that actions lead to measurable outcomes. Will need to better address in the next program review.

Student Success and Equity Feedback

Narrative:

The program is projecting an encouraging upward trend in degrees awarded, particularly for the upcoming year (FY26). This momentum is especially notable as there were three degrees awarded in FY25 which were then supplemented by eight additional students who graduated in Summer 2025 (which will be counted in the FY26 total). Together, these figures reflect strong student progress. Looking back, degree completion has shown some natural variation. The program reached a high of 11 degrees awarded in FY22, followed by a decrease to three in FY23. Since then, numbers have stabilized, maintaining a steady average of three to four degrees annually through FY25. These shifts, particularly the expected increase in FY26, may offer a valuable opportunity for reflection. A focused analysis in the 2027 full program review may help identify the factors driving student persistence and degree completion (for FY 23 and 26 especially), and guide strategies to build on these for the future. In terms of supporting diverse student success, the data are promising, showing narrowing achievement gaps among several student demographics, including [REDACTED], [REDACTED], [REDACTED], [REDACTED], and [REDACTED] students, in course completion rates. The program credited the Geo Learning Community as a key factor in these improvements, though additional information on how this and other inclusive practices address equity gaps would strengthen future reporting. While strategies to improve retention or graduation were not specifically outlined, the overall data trends are positive. Providing more context and detail on the factors driving these outcomes will also offer valuable insight for the 2027 full program review.

High Impact Practices Feedback

Narrative:

Reviewer Names: