

Department of Geology & Geophysics Biannual SLOA Report, 2014

Introduction

In 2012, the Dept. of Geology & Geophysics substantially revised undergraduate and graduate assessment plans. The revised plan for the BS in Geoscience relied upon seven assessment tools: a concept inventory, a field camp exit survey, a capstone course rubric, O and W rubrics, an undergraduate exit survey, and alumni tracking. The graduate MS and PhD programs planned to employ five tools to assess whether students were meeting learning outcomes: a program assessment questionnaire, a thesis rubric, an annual report form, an exit survey, and alumni tracking. This report emphasizes the data we obtained from our assessment tools and the department's response. We also outline and explain modifications that we have made to assessment tools and plans in the past year and present a new assessment plan for the revised BA in Earth Science program.

Summary of Results and Recommendations

- **Undergraduate Programs:** Overall, we find that our undergraduate students show positive learning gains across the introductory sequence (based on the concept inventory), demonstrate mastery of geologic concepts and methods (based on the capstone project), and possess the ability to revise and improve their written contributions when encouraged to do so (based on W rubrics). However, we find we are not meeting goals in several areas and recommend the following improvements.

Writing Skills: Although students do improve as a result of W courses, the faculty unanimously find that the majority of students are deficient with respect to writing skills. To help remedy this situation, we have added an additional W course (Geos 309 – Tectonics) beginning in fall 2014. This is a required course for all BS students, and it is the third required W course for students in the Geology, Geospatial, and Paleontology concentrations. These students will therefore be taking an “extra” W course in order to complete their degree. In addition, we will examine other required and elective courses during our fall assessment meeting in search of ways to embed more writing in the geoscience curriculum.

Advising: The undergraduate student feedback seminar revealed a need for more frequent meetings with advisors earlier in the students' academic careers. Whereas we have a faculty member who serves as the first contact for new majors during the summer, many new students fail to find an advisor in their specialty during the following academic year. We will take two steps to improve undergraduate advising. First, we will assign all new students (Freshman and transfer students) to advisors most familiar with their chosen concentrations during the first faculty meeting every fall. Second, we will revise and update the undergraduate handbook, which will include the 4-year plans for all BS and BA concentrations. Revised handbooks will be available by the beginning of the fall 2014 semester.

Capstone Course: Due to survey design and a low response rate, the Field Geology Exit Survey was not as useful as we had hoped. We plan to revise the survey to target certain areas where input is lacking. In addition, we will gather students in the computer lab after they return from the field and have them complete the survey on site. We expect that this will result in a 100% response rate. Although students were generally happy with the course, we had a new Field Camp Director in summer 2013. He will be making changes in the curriculum in an attempt to improve the experience for students enrolled in the 2015 course.

Undergraduate Research: The undergraduate feedback seminar revealed that students are unsure how and when to get involved in undergraduate research projects.

Furthermore, anecdotal evidence indicates that some students are underprepared for research experiences. To remedy this, we will require students enrolled in undergraduate research to be science majors with upper division standing. We will also encourage faculty to recruit junior and senior students from their upper division courses.

Exit Surveys: The response rate to our undergraduate exit survey was so low that the data had virtually no value. This year, we have elected to switch to an electronic survey designed and distributed by the American Geological Institute. Response rates have already improved.

• **Graduate Programs:** In general, we find that students are completing their programs in a timely fashion. Most attend conferences prior to graduating, and many present at those conferences. 79% of all recent graduates obtained a job in their field or were accepted into another degree program prior to graduation. 100% of PhD students and 70% of MS students had at least one publication at the time of graduation. However, review of rubrics for oral thesis presentations, anecdotal evidence from faculty, and results of the graduate feedback seminar suggest that we are not meeting our goals in several areas. Therefore we recommend the following changes.

Writing Skills: Anecdotal evidence indicates that many student theses require substantial editing and revision by advisors and committee members. To assess this more quantitatively, we plan to revise the thesis rubric to include a question regarding the amount of time spent editing the thesis. Instead of asking the Chair to fill out the rubric after reading theses, the advisory committee will fill out the rubric. The committee chair will compile the data, submit average results to the Dept. Chair, and share the information with the student. This will give us a better idea of writing skills, as opposed to committee members' editing efforts.

In order to better prepare students to write a thesis, we have decided to create a rubric to evaluate the thesis proposal, a product submitted earlier in the student's graduate career. This rubric will be filled out by committee members after reading the thesis proposal. The results will be compiled by the committee chair and shared with the student. Students that score less than 3.5 out of 5 on the written proposal will be strongly encouraged to enroll in Geos 675 (Presentation Skills for Geoscientists) the following fall. The purpose of this new tool is to identify students who need further practice prior to writing a thesis or a manuscript and to increase the number of manuscripts prepared by students prior to graduation.

Oral Presentation Skills: Examination of our thesis defense rubrics indicates that many student presentations are lacking in organization, and students often struggle to provide clear answers to audience questions. In order to identify deficiencies in presentation skills prior to the thesis defense, we will create a rubric to be filled out by committee members following presentation of the thesis proposal. Students that score less than 3.5 out of 5 on the oral presentation will be strongly encouraged to enroll in Geos 675 (Presentation Skills for Geoscientists) the following fall.

In addition, we will simplify the existing rubric for evaluating the thesis defense. The committee chair will compile data from the audience and distribute the results to the student, the faculty, and the Dept. Chair. This will facilitate quantitative analysis of oral defenses in future reports.

Advising: The graduate feedback seminar reveals that students have difficulty keeping track of degree requirements, are unclear what some of the requirements mean, and need help finding answers to questions about life in Alaska. To help remedy this situation, we will do three things. First, we will hold an annual graduate student orientation a few weeks into the fall semester. This will focus on academic requirements, but continuing students will be present for a Q&A about student life. Second, we will compile a graduate student handbook by the beginning of the fall 2014 semester. Third,

the Q&A sessions will be turned into a list of FAQ's and posted on the department website.

Student Association: Graduate feedback includes a variety of requests for training on software programs and opportunities to connect with other students in the department. To this end, we will recommend and facilitate creation of a Geoscience Student Association. To facilitate, we will advertise the association, encourage participation, and expand the functions beyond those of the current Geoscience Club. Goals include hosting workshops where graduate students can share their computer skills by training others and providing a venue for students to find solutions to problems of mutual interest.

BS in Geoscience: Tools, Results, and Actions

Six of the seven tools were used more or less as planned. Summary data and our responses are presented below. In addition, we explain our decision to discontinue alumni tracking at the department level and add an annual undergraduate "feedback seminar".

• **Geoscience Concept Inventory (GCI):** We had planned for students taking Geos 101 (The Dynamic Earth) and Geos 112 (Historical Geology), our introductory sequence for Geoscience majors, to take a pre-test and post-test at the beginning and end of each course, respectively, to assess misconceptions and measure learning gains or losses. After the first year, we decided that the 101 post-test and 112 pre-test are unnecessarily redundant. Since fall 2013, students repeat the test only twice (instead of three times) during the two-semester sequence: once at the end of Geos 101 and once at the end of Geos 112. Individual responses to all questions are entered into a spreadsheet by a TA. Data from the 2013-2014 academic year are still being compiled and will be included in our 2015 report. Next year, we plan to have pre-tests scored earlier in the semester so that data is available to instructors during the semester and ready for analysis by the time SLOA reports are due in May.

Table 1: Summary results of spring 2013 introductory sequence pre- and post-tests.

Question #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Geos 101 Pretest	18	10	12	17	14	19	14	16	0	16	34	36	33	27	33	8	29	10	18	22
% Correct (N = 38)	47	26	32	45	37	50	37	42	0	42	89	95	87	71	87	21	76	26	47	58
Geos 101 Posttest	26	19	16	17	25	25	16	20	1	17	35	34	35	35	30	12	32	16	24	18
% Correct	68	50	42	45	66	66	42	53	3	45	92	89	92	92	79	32	84	42	63	47
Geos 101 Gains (raw)	8	9	4	0	11	6	2	4	1	1	1	-2	2	8	-3	4	3	6	6	-4
Geos 101 Gains (%)	21	24	11	0	29	16	5.3	11	3	3	3	-5	5.3	21	-8	11	7.9	16	16	-11
Geos 112 Pretest	17	13	14	16	17	16	11	15	0	20	21	26	23	22	23	8	26	10	15	9
% Correct (N = 26)	65	50	54	62	65	62	42	58	0	77	81	100	88	85	88	31	100	38	58	35
Geos 112 Posttest	23	23	15	16	23	19	11	12	2	20	22	25	25	25	26	10	23	9	21	9
% Correct	88	88	58	62	88	73	42	46	8	77	85	96	96	96	100	38	88	35	81	35
Geos 112 Gains (raw)	6	10	1	0	6	3	0	-3	2	0	1	-1	2	3	3	2	-3	-1	6	0
Geos 112 Gains (%)	23	38	4	0	23	12	0	-12	8	0	4	-4	7.7	12	12	7.7	-12	-4	23	0

Summary data from spring 2013 (Table 1) reveal that 70% or more of the students answered five out of the 20 questions correctly (Qs 11-15, see attached GCI) on the Geos 101 pre-test. 70% or more of the students answered the same five questions correctly on the Geos 101 post-test, but there were substantial learning gains (11-29% increase) on ten questions (Qs 1-3, 5-6, 8, 14, 16, and 18-19). On the Geos 112 post-test, 70% of students answered 12 of the 20 questions correctly. Eight questions (Qs 3-4, 7-9, 16, 18, and 20) remained problematic for 40% or more of the students. Faculty in charge of Geos 101 and Geos 112 lectures and labs have discussed how to address these concepts more explicitly throughout the two semesters.

• **Field Geology Exit Survey:** “Field Geology” is an eight-week summer course in which students nearing completion of a Bachelor of Science degree in geology apply, refine, and expand their skills and knowledge by collecting data, making geologic maps, and interpreting the geologic history of several areas while living and working in the field. At UAF, GEOS 351 W “Field Geology” is our field camp and 8-credit capstone course, and is offered every other year. To assess the effectiveness of the capstone and compare the preparation and outcomes of UAF and non-UAF students enrolled in the course, we circulated a 19-question, free response survey to all 15 students and received 6 responses (40% response). The survey and responses are attached to this report.

Due to the poor response rate, the data is not necessarily reliable, but all students reported that they gained valuable job skills and all felt the course was worthwhile. All felt that the physical facilities were at least adequate and all were pleased with the high instructor: student ratio. Students were least happy with the 3rd (Livengood) segment and this will be significantly modified if employed in 2015. A clearly identified problem was the variable degree of training among the instructors. We will correct this problem when the course is next offered.

• **Capstone Courses and Rubrics:** Students choosing the Geology, Paleontology and Geospatial Sciences concentrations all complete a capstone course in Field Geology (Geos 351). Typically, several students from other institutions also participate in the course. Table 2 compares the performance of UAF and non-UAF students according to the Field Capstone Rubric.

The fundamental problem, as indicated in Table 2, is that the best UAF students are as good as the best students from outside UAF, but many UAF Geoscience undergraduate students possess mediocre academic abilities and drive to succeed. UAF students score especially poor relative to the outside UAF students in the quality of their writing and integrative thinking. Students simply aren't being adequately prepared for professional-quality writing through UAF's basic writing courses (Engl 111, 213). UAF students compare well with non-UAF students in their knowledge of basic geologic concepts, however, including map location, structural measurements, quality of notes, rock identification, and basic mapping skill. All students successfully completed the class. All but one (i.e., 10%) of the UAF students were judged by the faculty as sufficiently competent for a favorable job or graduate school recommendation. This compares favorably with only 80% judged sufficiently competent in 2011. A greater stress on use and comprehension of topographic maps, initiated after summer 2011, led to higher scores in using topographic maps in 2013 (score of $2.7 \pm .6$ vs. $3.6 \pm .7$). Although it's unclear how much the improved scores in 2013 are due to more motivated and academically oriented students, the higher 2013 scores indicate the superior skills of the 2013 over the 2011 students.

Table 2: Performance of UAF and non-UAF students enrolled in Geos 351 (Field Geology), according to the Field Capstone Rubric.

NOTE:

5 =excellent,

4= good,

3 =adequate,

2=inadequate

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	Student background															
	1. UAF student? (Y/N)	2. General academic abilities	3. Enthusiasm for geology	4. Effort put into this course	Skills and knowledge from field camp	1. Ability to navigate and locate contacts and structures on topographic maps	2. Quality of field notes	3. Rock identification	4. Stratigraphic concepts	5. Measurement of structural attitudes	6. Mapping and interpretation of structures	7. Understanding of geologic context of map areas (knowledge of Alaska geology)	8. Ability to integrate local with regional-scale geologic features	9. Ability to use geologic evidence	10. Quality of writing	Recommend this student for geologic employment and/or graduate school? (Y/N)
UAF student 1	Y	3.5	5	4.5		4	3	4	4	4	4.3	3.5	3.2	3	3	Y
UAF student 2	Y	2	2	2.5		2.8	3	2	3.5	3.5	4.3	2.5	3.2	2	3	N
UAF student 3	Y	3	4	4		3	4	3	3.5	3	4.3	3	3.2	3	2.5	N
UAF student 4	Y	3.5	5	5		3	4	3	4	3	4.3	2.5	3.2	4	3.5	Y
UAF student 5	Y	5	5	5		4.8	4	4.5	5	4.5	4.8	4.5	4.8	4	4	Y
UAF student 6	Y	3	3	3.5		3	4	3	4.5	3.5	4.3	3.5	3	3	4	Y
UAF student 7	Y	4	5	4.5		4	4	4	4.5	3.5	4.3	3.5	3.6	4	4.5	Y
UAF student 8	Y	3	5	4		4	4	4	4	4	4.5	3.5	3.2	3	2.5	Y
UAF student 9	Y	4	4	4		4	4	4	4	3.5	4.3	3.5	3.6	4	4	Y
AVG UAF		3.4	4.2	4.1		3.6	3.8	3.5	4.1	3.6	4.4	3.3	3.4	3.3	3.4	
stdev		0.8	1.1	0.8		0.7	0.4	0.8	0.5	0.5	0.2	0.6	0.5	0.7	0.7	
non-UAF 1	N	3.5	4	4		3.5	3	3	3.5	3.5	4.5	3	3.4	3	3.5	N
non-UAF 2	N	5	5	5		4.5	4	5	4.5	4	4.7	4	4.6	5	5	Y
non-UAF 3	N	5	5	5		4.2	4	5	4.5	4	4.7	4	4.6	5	5	Y
non-UAF 4	N	4	4	4		3	2	3	4	2	3.7	2	3.2	3	4	Y
non-UAF 5	N	5	5	5		4.5	4	5	5	4	4.7	3.5	4.6	5	4.8	Y
Non-UAF 6	N	4.5	5	4.5		4.5	5	3.5	4	4.5	4.5	2	3.6	5	4.7	Y
AVG non-UAF		4.5	4.7	4.6		4.0	3.7	4.1	4.3	3.7	4.4	3.1	4.0	4.3	4.4	
stdev		0.6	0.5	0.5		0.6	1.0	1.0	0.5	0.9	0.4	0.9	0.7	1.0	0.7	

• **O and W Rubrics:** Multiple O and W courses are offered as required or elective courses within the department. Final presentations and papers will be assessed with O and W rubrics. W instructors met during the summer of 2012 to discuss the possibility of using a single rubric for all final papers in W courses. Because the nature of these papers range from results of original research to an analysis of a debate in the professional literature, we found that no single rubric was sufficient to provide useful feedback to students. Consequently, W courses will continue to employ separate rubrics to evaluate final papers.

A comparison of the rubric scores for first and final drafts of Geos 315W term papers for the fall 2013 semester (Table 3) reveals average learning gains in all categories, particularly grammar and spelling (G&S) and referencing (Refs), with an average increase of 6.8% between the first and final drafts. Credit for revisions was added to the rubric for the final draft in fall 2013, with excellent results. Students spent more time and effort on the revision process. 100% of students scored 4 – 5 on their revisions. 100% also received a final grade of A or B.

Table 3: Rubric scores for first and final drafts of term papers for the 10 students enrolled in Geos 315W (Paleobiology and Paleontology) in fall 2013. Note that the rubrics for the two drafts (attached below) differ in that the quality of revisions counts toward the grade on the final draft. Scores range from 5 (excellent) to 1 (unacceptable).

First Draft		Content	G&S	Org	Refs	Orig	Score	Percent	Grade
Student 1		4	2	3	4	4	3.4	79	C+
Student 2		4	3	5	2	5	3.9	84	B
Student 3		3.5	4	4.5	4	5	4	85	B
Student 4		5	2.5	5	3.5	5	4.35	89	B+
Student 5		4	3	4.5	4	4	3.9	84	B
Student 6		3.5	3	4	2	4	3.4	79	C+
Student 7		4	4	4	2	4	3.8	83	B
Student 8		5	3	5	4	5	4.5	90	A-
Student 9		3	2	3	3	4	2.9	74	C
Student 10		5	4	2	3.5	4	3.95	85	B
Average		4.1	3.05	4	3.2	4.4	3.81	83.2	
Final Draft	Revision	Content	G&S	Org	Refs	Orig	Score	Percent	Grade
Student 1	4	4	2.5	4	4.5	5	3.925	84	B
Student 2	4	4.5	4.5	5	4.5	5	4.4	89	B+
Student 3	4	4	4	5	4.5	5	4.25	88	B
Student 4	4	5	4	5	5	5	4.45	90	A-
Student 5	5	4.5	5	5	5	4	4.825	96	A
Student 6	4	4	4	4	4.5	4	4.05	86	B
Student 7	4.5	4.5	4.5	5	5	4	4.55	91	A
Student 8	5	5	4.5	5	5	5	4.925	98	A+
Student 9	4	3.5	3	4	2.5	4	3.625	81	B
Student 10	4	4	4	5	4.5	4	4.15	87	B
Average	4.25	4.3	4	4.7	4.5	4.5	4.315	89	

We introduced two new O courses during spring 2014. Instructors for O courses will meet this summer to evaluate the feasibility of a single rubric for oral presentations.

- **Undergraduate Exit Survey:** Graduating seniors are asked to complete an online exit survey that includes questions about their experience at UAF and their plans following graduation. Of the 6 BS students that graduated in spring 2013, only one completed the survey. This low completion rate makes the results difficult to interpret. In an attempt to increase survey completion rates among graduating seniors and facilitate analysis and comparison of results, we switched to a new survey, designed and delivered internationally online by the American Geological Institute (AGI) (attached below). We are still gathering data from spring 2014 graduates, but our response rate has already improved. This AGI survey also has the additional advantage of allowing us to modify it with our own questions if we determine the need to do this in future years, and to compare the results from our students with those of their peers in the United States.

- **Tracking Graduates and Alumni:** In 2012, we planned to use e-mail, the new departmental Facebook page, and internet searches to track our graduates' career paths. We have subsequently found that office staff have difficulty fitting these tasks into their workloads. Because we are facing a reduction in our staff in summer 2014, we have concluded that we do not have the resources at the department level to track our alumni as planned, and we have removed this from our list of assessment tools.

- **Undergraduate Feedback Seminar:** In spring 2014 we added a new tool to our assessment plan and held our first "undergraduate feedback seminar". We invited undergraduate students in the BS and BA programs to meet during our usual Friday seminar time slot and compile answers to the following questions: How should your

program be changed? Which aspects of your program should remain as they are and not be changed? How should the department be changed? What aspects of the department should not be changed? Approximately 15 students attended the feedback session. Faculty were not present, but a graduate student who recently completed our BS program moderated the discussion and compiled the students' feedback. Their input and our responses are attached to this report.

BA in Earth Science

The BA program recently underwent substantial revision to reduce the number of required courses and create three concentrations: Earth Systems Science, Geological Hazards and Geoscience Education. A revised assessment plan for the BA program is attached to this document. It includes the following tools: Geoscience Content Inventory pre- and post-tests; rubrics for O and W courses; a content-area exam (for students in the Secondary Education Concentration); an annual undergraduate feedback seminar; and completion of an online exit survey designed and distributed by the American Geological Institute. Results of this new assessment program will be compiled in our next report.

Graduate Programs

Current assessment plans for the MS program in Geology, PhD program in Geology, MS program in Geophysics and PhD program in Geophysics are attached. Whereas the objectives and outcomes for each of the programs are different, all of our graduate programs emphasize critical thinking, oral and written presentation skills. In 2012 we created five assessment tools that can be used for each of the four graduate programs: a program assessment questionnaire, a thesis rubric, an annual report on student publications, an exit survey, and alumni tracking. Summary data for two of these tools are presented below. In addition, we explain our decision to discontinue both the program assessment questionnaire and alumni tracking at the department level and add an annual graduate "feedback seminar".

• **Graduate Program Assessment Questionnaire:** This form was intended to be completed following each graduate student's annual committee meeting. The committee was to discuss the student's performance and provide a consensus evaluation of whether the student is on schedule, ahead of schedule, or behind schedule with respect to skills and abilities. This tool was heavily debated at the 2012 assessment meeting. Although faculty voted to use it at that time, committees subsequently declined to complete the form, as they felt the existing evaluation of the annual committee meeting was sufficient. Consequently this tool was not effective, and we have removed it from our assessment plans.

We have elected to replace the questionnaire with a pair of rubrics for ranking graduate thesis proposals, which all students submit prior to their oral comprehensive exam, and the oral presentation of these proposals. These rubrics will be filled out by committee members following the oral exam in order to provide more extensive feedback to the student regarding writing and presentation skills and/or deficiencies. Students that score less than 3.5 out of 5 on the written proposal or oral presentation will be strongly encouraged to enroll in Geos 675 (Presentation Skills for Geoscientists) the following fall. The purpose of these rubrics are to provide more extensive feedback to students regarding their written and oral presentation skills, to identify students who need further practice prior to writing a thesis or a manuscript, and to increase the number of manuscripts prepared by students prior to graduation.

• **Capstone and Thesis Rubric:** The Thesis Rubric is designed to assess evidence of critical thinking skills and the quality of written and/or oral communication skills for graduate as well as undergraduate students. We are still waiting for assistance in creating an online version of the form so that evaluators can click a box to indicate whether they are assessing a comprehensive exam, thesis defense, or written thesis and results will be automatically compiled. We expect this online form to become available during the 2014-2015 academic year. Therefore results should be available in our next annual report.

Although we originally intended this form to be filled out by the Dept. Chair after reading theses and dissertations, anecdotal evidence suggests that many of these documents are substantially edited by committee members and advisors. Therefore we intend to modify the procedure and have the advisory committee fill out the rubric. The committee chair will compile the data, submit average results to the Dept. Chair, and share the information with the student. This will give us a better idea of writing skills, as opposed to committee members' editing efforts.

• **Annual Report Attachment:** In order to better monitor graduate student progress in written and oral presentations, we added a form to the annual committee meeting report to be completed by the graduate student (Dept. of Geology & Geophysics Annual Report Attachment). Graduate students provide citations for all papers and reports published during the previous year or in press at the time of the meeting. This has been successfully implemented, and it has greatly facilitated compilation of our annual publications report each fall. Below we present results for 2012, as publications for the previous year are tallied and reports compiled over the summer.

Table 4: Publications, abstracts, conference participation, outside grants and internships reported on the annual committee meeting report, fall 2012-2013. Note that totals are the numbers of students with these experiences or products, rather than the total number of products.

Degree Program	# Responses	# w/Pubs	1st Author	# w/abstr	Conf Partic	Grants	Internship
Geology MS	18	2	0	13	15	4	3
Geology PhD	13	6	4	8	8	5	2
Geophysics MS	7	1	0	4	4	1	2
Geophysics PhD	21	12	9	16	17	9	1
Totals	59	21	13	41	44	19	8

Data from the annual report was compiled alphabetically by first author, to facilitate incorporation in the annual fall department report to the Dean. However, this made some of the information cumbersome to extract. In addition, this data does not account for students who had nothing to report. In the future, we will parse the data by program, products/experiences and the total number of each per student. Based on the data above, it appears we are doing well with respect to conference participation and PhD student publications. 75% of students in the database attended at least one conference, and 53% of PhD students reported a publication during that year.

• **Geophysics Program:** The Geophysics MS and PhD programs were substantially revised in 2012. Geophysics faculty meet several times annually to discuss the students' feedback on the program, adjust the curriculum, and debate further changes to the programs.

• **Graduate Exit Survey:** MS and PhD graduates complete an online exit survey (attached) that includes questions about their experience at UAF and future plans, including employment and/or continuing education. Of the 27 students that graduated

between summer 2012 and fall 2013, 19 filled out the exit survey, a response rate of 70%. Key findings are described below. To facilitate analysis and comparison of results and improve response rates, we switched to a new survey in spring 2014, designed and delivered online by the American Geological Institute (attached below). These results will be presented in our 2015 report.

Table 5: Results of graduate exit surveys, summer 2012 – fall 2013. Data columns include average years in program, number of respondents with publications, number of respondents with at least one first authored publication, average number of publications for all respondents, number of respondents with a job at the time of graduation, and number of respondents pursuing an additional graduate degree program.

Degree Program	# Responses	Ave. Yrs.	# w/Pubs	1st Author	Ave # Pubs	Job at Grad	Addl Degree
Geology MS	6	2.6	3	2	2	5	
Geology PhD	3	4.2	3	2	4	2	
Geophysics MS	4	3.25	4	2	2.25	1	3
Geophysics PhD	6	5.4	6	6	1.3	4	

Exist surveys indicate that 79% of our students have a related job or have been admitted to an additional graduate degree program at the time of graduation. 84% are authors on at least one paper, and 89% of PhD students are first authors on at least one paper.

• **Tracking Graduates and Alumni:** In 2012, we planned to use e-mail, the new departmental Facebook page, and internet searches to track our graduates' career paths. We have subsequently found that office staff have difficulty fitting these tasks into their workloads. Because we are facing a reduction in our staff in summer 2014, we have concluded that we do not have the resources at the department level to track our alumni as planned, and we have removed this from our list of assessment tools.

• **Graduate Feedback Seminar:** In spring 2014 we added a new tool to our assessment plan and held our first "graduate feedback seminar". We invited graduate students in the Geology and Geophysics MS and PhD programs to meet during our usual Friday seminar time slot and compile answers to the following questions: How should your program be changed? Which aspects of your program should remain as they are and not be changed? How should the department be changed? What aspects of the department should not be changed? Approximately 12 students attended the feedback session. Faculty were not present; two graduate students (one from Geology and one from Geophysics) moderated the discussion and compiled the students' feedback. Their input and our responses are attached to this report.

UNIVERSITY OF ALASKA FAIRBANKS

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

Academic Outcomes Assessment Plan

Mission Statement: The Department of Geology & Geophysics 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.

Intended Outcomes/Objectives	Assessment Criteria and Procedures	Implementation (what, when, who)
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. Students will repeat the GCI again at the end of an upper-division course. 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 lab and repeated during the final Geos 101 exam and again during the final Geos 112 lab. Transfer students who have already complete the introductory sequence will take the GCI at the time they declare a major. All students will repeat the GCI in an upper-division course (Geos 315 or Geos 475) in order to assess long-term retention. TAs will score the results by question. 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.	1. 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. 2. 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.	1. 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. 2. 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.
Graduates will demonstrate skills in written and oral communication consistent with professional standards.	1. Students will write multiple drafts of a research paper in core courses (Geos 315, Geos 475, Geos 351). Final papers will be assessed with a course-specific rubric. 2. Students will present results of research or experiments in oral and/or poster presentations for core courses (incl. Geos 112, Geos 317, Geos 377 and Geos 475). Oral presentations will be assessed with the "O" rubric.	Assessments of written and oral presentations will be compiled and reviewed annually by faculty teaching O and W courses.
Students seeking employment or continued education in geoscience or related fields will be employed or admitted to graduate programs within one year of graduation.	Graduates will complete an on-line exit survey designed and distributed by the American Geological Institute (AGI). Additional input from students will be gathered during an annual student feedback seminar.	Survey results will be reviewed and discussed annually. One Friday seminar slot will be reserved for students to compile feedback, without faculty present. Faculty will discuss and respond to feedback annually.

UNIVERSITY OF ALASKA FAIRBANKS

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

Academic Outcomes Assessment Plan

Mission Statement: The Department of Geology & Geophysics 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 in geological hazards mitigation or secondary science education and graduate studies in geoscience, earth science education, hazards communication, planning and mitigation, or related fields

Intended Outcomes/Objectives	Assessment Criteria and Procedures	Implementation (what, when, who)
Upon completion of introductory course (Geos 101 or 120 and Geos 112 or 106), 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 and after Geos 101 and again after Geos 112 to assess learning gains or losses during the introductory sequence. Students will repeat the GCI again at the end of an upper-division course. 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 or across the curriculum.	The GCI will be administered during the first Geos 101 lab and repeated during the final Geos 101 exam and the final Geos 112 lab. Transfer students who have already complete the introductory sequence and students who select the alternate sequence (Geos 120 and Geos 106) will take the GCI at the time they declare a major. All students will repeat the GCI in an upper-division course (Geos 315, Geos 475, or Geog 490) in order to assess long-term retention. TAs will score the results by question. Instructors will meet annually to discuss how to adjust instruction to address common misconceptions.
Graduates will demonstrate skills in written and oral communication consistent with professional standards.	1. Students will write multiple drafts of a research paper in a required course (Geos 315, Geos 475, Geog 490 or Engl 314). Final papers for Geos 315 will be assessed with the W rubric. Final papers for Geos 475 and Geog 490 will be assessed with the capstone project rubric. 2. Students will present results of research or experiments in oral and/or poster presentations for required courses (Geos 475, or Geog 490). Oral presentations will be assessed with the "O" rubric.	Assessments of written and oral presentations will be compiled and reviewed annually by faculty teaching O and W courses.
Students in the Secondary Education concentration will be able to pass a certification exam in the earth science content area.	Students pursuing a secondary teaching license must pass an exam in their content area in order to be admitted to the Dept. of Education's licensure program, which is embedded in the concentration. Scores must meet or exceed the minimum set by the State of Alaska.	The Praxis II Subject text will be administered by the Dept. of Education prior the admission to the secondary licensure program. If students fail to earn the minimum score, required courses for this concentration will be revised on consultation with faculty from the Dept. of Education
Students seeking employment or continued education in earth science or related fields will be employed or admitted to graduate programs within one year of graduation.	Graduates will complete an on-line exit survey designed and distributed by the American Geological Institute (AGI). Additional input from students will be gathered during an annual student feedback seminar.	Survey results will be reviewed and discussed annually. One Friday seminar slot will be reserved for students to compile feedback, without faculty present. Faculty will discuss and respond to feedback annually.

Field Camp Exit Survey 2013 Comments (N=6; 4 UAF, 2 out-of-state)

Fairbanks	Healy	Livengood	Limestone Gap
<i>Was this part of the course necessary?</i>			
Chena Ridge helpful, Lackloey redundant	Helpful drawing contacts, locating on map	Somewhat	Yes
Yes, refresher very helpful	Yes	Necessary to understand geol complicns	Yes
Yes, brought everyone up to date	Yes!!	Yes !!	Yes
Yes	Yes	No! What was the point?	Yes
Good introduction	Probably	Yes	Yes
Yes, good refresher	Useful introduction, but not necessary	To have a reality check, yes, but not necessarily at this site	Yes, fantastic
<i>More, less, or about the same amount of time on the project?</i>			
Only Chena Ridge	Same	Same, if you do it again	Same
Same, was well put together	Same	Less, days became confusing	Same
Same	Little more would have helped	More if possible	Same
Same	Same	Go to a different place	Same
Same	A bit less	More time spent will lead to mutiny	Same
Same	less or the same; more Denali	Same	Same
<i>How well (were you prepared and how) did this project prepare you for the later projects?</i>			
Helpful, reminded me of mapping techs.	prepared, but lack of structures did not prepare me as well as it could have	neither prepared nor prepared for next ; Area confusing, complicated, few outcrops	Underprepared for structural geology
Field notes should be discussed more; outline not nearly as convenient	Good intermediate mapping project	Don't think you can prepare for Livengood	Livengood did not help, other projects did
Decent	Prepared and helped for future projects	Excellent help for future	Well
Well	Project really helped me understand mapping	No, it was a waste of time	Not well prepared, thanks to Livengood
Good preparation; more time for report	felt prepared, helped for future	you cannot prepare adequately for LG	Pretty well prepared
Well, regional geol should be stressed more	well prepared, but not for Denali exercise	as prepared as one could be; difficult distinction between float and in-situ	moderately well; strat & structural intro at the beginning REALLY helped
<i>How effective were the field sites for teaching these principles?</i>			
Lackloey Hill as if were not mapping, Chena Ridge very helpful.	Quite helpful	Not effective	Excellent
Effective	overall good; pebble imbric. not so good	all sites taught us the objective	Very good
Good	Excellent	Pretty excellent for interior AK	Good
Very effective	Great	Fine	Great
Adequate	Effective	A lot were very confusing	very effective
Good balance between guided and self-exploration	great, wonderful exposures	Good, not great, especially near complete lack of outcrops	Wonderful, couldn't have been more appropriate
<i>How appropriate was the instructor/student ratio?</i>			
Good	Good	Good	Good
Good	Good	Only 1 instructor knew what was going on	Good
Good	Excellent	Excellent	OK
Great	Great	Fine	Great
Worked really well	Good	Good	OK, preferred having instructor for each traverse
Fine	Good	Good	Good, though not every instructor was as involved or helpful as Wes
<i>How liveable were the camp conditions?</i>			
	Good	Good	Excellent
	Great	Great	Awesome
	Excellent, used a tent	Good	Excellent
	Good, should have brought tents (heat)	Fine	Awesome
	Very nice, enjoyed the cabin	Bug infested!	surprisingly liveable
	Cabin were hot & buggy, better would have been tents, should have had option	Just fine, mosquito head net should be added to equipment list	Great
<i>Was the equipment up to the task?</i>			
0.3 mm pencils would have been great	Tripod chairs are terrible	Dito tripod chairs	Dito tripod chairs
Good	Great	Great	Yes

Yes	Yes	Yes	Yes
Yes	Yes	Fine	More office tent space would be nice
Yes	Yes	Food truck was awesome	2 big office tents instead of 1 big, 1 small
Yes	Yes, great, especially Jeff's food	Worked fine	Yes
Were the hand outs and other written material clear, adequate, useful?			
Yes	Yes	not very helpful, seems poorly understood	Yes
Kind of; we did not follow writing template	Great, writing template wasn't followed; paper construction unclear	Alright, but did not follow template	Yes, very helpful
Objective was not clear when came to reports	Yes	Yes	For most parts, needed help interpret. struct.
Yes	Yes	Fine	
Yes	Yes	Yes	Yes
Yes	Yes, good resource	Yes	

Was the report review/feedback useful?

Yes	Yes	Yes	Not yet received
Yes	Yes	Yes	Not yet received
Yes	Some feedback was useful	Yes	
Yes	Yes	Fine	
Slightly useful, not enough time to read	Didn't receive feedback on everything	not enough time for thorough review	N/A
Useful	Unit descriptions and Denali stereonet were helpful, but daily worksheet questions were a bit basic and repetitive	Definitely, appreciated personal feedback	haven't received them yet
How would you change this portion of the course?			
Cut Lackloey Hill	Wouldn't change it	Move it to somewhere with more outcrops	No change
Emphasize note taking, give more than one format	No change. Denali project was awesome great structural help	Make shorter, spend time elsewhere that would help build our mapping skills	It's great
Don't	Little more time in the field	More detail about the deposit	
Instructors should be more organized and agree on answers, confused students	Not sure	Go somewhere else; get rid of project portion, took away from mapping	
Probably not	Doesn't need to be 7 days	More bug spray, invest in bug nets	Don't think so
Focus on connection between Fairbanks and Alaska geology	Fewer and more targeted questions to answer each night	I had one of the best experiences compared to other students; in future: shortcomings should be stressed at the beginning to avoid discouraged and frustrated students	Mostly it worked well. Some additional preparation and organization among instructors that each has area (geographic, subject, etc.) to help students get a clearer and more complex picture of the geology and to relieve Wes.

Road Travel: <i>In your opinion, how comfortable and effective was the bus, van, cook truck combination in moving from site to site?</i>
Very comfortable
Good, make less stops; just drags out travel time
Good to me
Great
Vans were a nice way to get from place to place
Just fine; riding in the brown van was fun! Don't get rid of it!
<i>As we travelled along the road system towards Healy and Livengood we made several stops. How effective were these stops?</i>
Healy stops were helpful, Livengood not
Helpful, greater area geology helped a lot
Fine
Stops on way to Livengood were irrelevant
Didn't do really do anything more with particular stops on way to Livengood
Good, particularly geological context on the road to Livengood
<i>Fairbanks Facilities: How well did the Geology Department serve your needs?</i>
Well
Good
Great
Fine
As well as ever
Computer lab classroom was great
<i>If you used campus housing, how did those facilities help or hinder your course work?</i>
N/A
N/A
N/A
Conveniently close to Reichardt
N/A
Staying in dorms worked well; better coordination with dorms when dates change to confirm that we can stay there, was not clear one time

Additional Comments: <i>What did you most enjoy about Field Camp?</i>
LSG
Flying out to LSG
Mapping in the field
Meeting cool people, beautiful scenery, learning a lot
The experiences
The mountains, fantastic geology, great instruction
<i>What did you most dislike?</i>
Livengood project
Livengood
Writing reports
LSG report writing
Writing reports (but I dislike that for all classes)
Poor organization, particularly with start and end dates. These need to be set well ahead of time so that students can determine travel plans. I spent nearly 3 days of family vacation finishing up my final reports, which would have been impossible to adequately finish with high-quality work before the 5th. Ending on the 10th was fine, but we should be able to plan accordingly
<i>What was the most important field geology skill you learned?</i>
Look at things from as many angles as possible
Draw lines, erase, re-draw, erase,....
Improved mapping and identification of structures and lithology
Refining skills of observation
<i>What do you wish you learned that you didn't learn?</i>
Can't think of any
How to use structural data to help map areas like Livengood
Pretty well covered
More about ore deposit exploration (simply because I don't have the background, not because it is essential)
<i>How important do you anticipate the skills you learn in this course will be in your future?</i>
Don't think will use them directly, but the learnt principles will be quite helpful
Fairly important
Hopefully crucial
Not sure
Very
Very important/useful, particularly if I am able to find a job that is at least in part field-based.

Rubric for Evaluating Geos 315W First Drafts

Student:

Criteria	Excellent (5)	Very Good (4)	Average (3)	Needs Improvement (2)	Unacceptable (1)
Content (40%)	In-depth and focused review based on 5 or more articles that supports a clearly defined thesis.	Focused review of 4 or more articles, but details are lacking. Paper lacks depth. Provide an analysis as well as a summary.	Main points are drawn from 3 or more articles, but no clear theme emerges. Paper lacks focus. Organize your work around a central idea or thesis.	Cursory overview based primarily on 2 or 3 of the selected sources. Paper lacks focus and depth. More research is needed.	Factual errors are present and sources are insufficient. Paper lacks focus, depth, and accuracy. Read the papers more carefully and thoroughly.
Organization (20%)	Well-organized by theme or sub-topic, good introductory and concluding paragraphs.	Paragraphs are well structured and grouped by topic; introduction and/or conclusions need work.	Paragraphs lack structure <i>or</i> some material is out of place. Use topic sentences <i>or</i> sort material by subject.	Paragraphs lack structure and some material is out of place.	Paragraphs not grouped by topic; paper does not progress logically. Introduction and conclusions missing.
Grammar and Spelling (20%)	Flawless. Sentences and properly structured; words spelled correctly. Meaning is clear.	Very good; spelling <i>or</i> sentence structure could use work.	Good; spelling <i>and</i> sentence structure need work.	Regular errors in sentence structure, word usage, or spelling. Meaning is obscured.	Pervasive errors in word usage, spelling and sentence structure. Paper difficult to read and understand.
References (10%)	Paper is based on 5 or more articles. In-text references and citations are properly formatted.	Paper is based on 5 or more articles, but citations are insufficient or improperly formatted.	In-text citations are insufficient <i>and</i> reference list is improperly formatted.	Paper is based largely on fewer than 5 sources. Citations are improperly formatted and/or insufficient.	Sources are insufficient and citations are absent.
Originality (10%)	Highly original. Evidence from the papers supports the author's view and leads to a novel conclusion.	Author's contribution is evident in the thesis and in the discussion <i>or</i> conclusion.	Author's view is stated in the thesis but lacking elsewhere. Supporting evidence is provided.	It is not clear how the paper supports the author's view, if stated in the thesis.	Thesis summarizes but doesn't take a stand, turning the paper into content summaries.
Weighted Total	Percentage	Letter Grade	Summary Comments (see paper for details)		

Rubric for Evaluating Geos 315 W Final Draft

Student:

Criteria	Excellent (5)	Very Good (4)	Average (3)	Needs Improvement (2)	Unacceptable (1)
Revision and Editing (40%)	Significant, original improvements in all categories, especially those ranked 4 or lower on the first draft.	Significant, original improvements in all categories in which the first draft ranked 4 or lower.	Significant, original improvements in some categories; other categories ranked 4 or lower show no evidence of revision.	Significant, original improvements in only one category. Other categories ranked 4 or lower show no evidence of revision.	No evidence or significant, original editing or revision.
Content (15%)	In-depth and focused review based on 5 or more articles that supports a clearly defined thesis.	Focused review of 4 or more articles, but details are lacking. Paper lacks depth. Provide an analysis as well as a summary.	Main points are drawn from 3 or more articles, but no clear theme emerges. Paper lacks focus. Organize your work around a central idea or thesis.	Cursory overview based primarily on 2 or 3 of the selected sources. Paper lacks focus and depth. More research is needed.	Factual errors are present and sources are insufficient. Paper lacks focus, depth, and accuracy. Read the papers more carefully and thoroughly.
Grammar and Spelling (15%)	Flawless. Sentences and properly structured; words spelled correctly. Meaning is clear.	Very good; spelling <i>or</i> sentence structure could use work.	Good; spelling <i>and</i> sentence structure need work.	Regular errors in sentence structure, word usage, or spelling. Meaning is obscured.	Pervasive errors in word usage, spelling and sentence structure. Paper difficult to read and understand.
Organization (10%)	Well-organized by theme or sub-topic, good introductory and concluding paragraphs.	Paragraphs are wellstructured and grouped by topic; introduction and/or conclusions need work.	Paragraphs lack structure <i>or</i> some material is out of place. Use topic sentences <i>or</i> sort material by subject.	Paragraphs lack structure and some material is out of place.	Paragraphs not grouped by topic; paper does not progress logically. Introduction and conclusions missing.
References (10%)	Paper is based on 5 or more articles. In-text references and citations are properly formatted.	Paper is based on 5 or more articles, but citations are insufficient or improperly formatted.	In-text citations are insufficient <i>and</i> reference list is improperly formatted.	Paper is based largely on fewer than 5 sources. Citations are improperly formatted and/or insufficient.	Sources are insufficient and citations are absent.
Originality (10%)	Highly original. Evidence from the papers supports the author's view and leads to a novel conclusion.	Author's contribution is evident in the thesis and in the discussion <i>or</i> conclusion.	Author's view is stated in the thesis but lacking elsewhere. Supporting evidence is provided.	It is not clear how the paper supports the author's view, if stated in the thesis.	Thesis summarizes but doesn't take a stand, turning the paper into content summaries.
Weighted Total	Percentage	Letter Grade	Summary Comments		

Exit Survey Questions Spring 2014

Blue Text: Question

Green Text: Answer Format

Red Text: Mandatory questions

Purple Text: Conditional question

Department Identification

M Please choose the department from which you are graduating from the following list. If you do not see your department listed, please select "Other" and write in your University Name, Department Name in the blank provided.: (drop down and text field)
list of departments that have definitely agreed to participate

Contact Information

First Name: (text field)

Last Name: (text field)

In what country do you permanently reside: (drop down) list of countries

If the United States, then: In which state do you permanently reside: (drop down) list of states

Demographic Information

Gender: (radiobutton) Male; Female

Age: (drop down) range from 18-100

Hawaiian or Pacific Islander; Caucasian; No Answer

Citizenship Status: (radiobutton) US Citizen, Permanent Resident; Non-Permanent Resident

If US Citizen or Permanent Resident, then:

Ethnicity: (radiobutton) Hispanic/Latino; Non-Hispanic/Non-Latino

Race: (check boxes) African American; Asian; Native American or Alaskan Native; Native

Education Background

M Did you take a formal class in earth science, environmental science, or geology in high school?: (radiobutton) Yes; No

M Did you participate in any extra-curricular activities in the earth sciences before attending college?: (radiobutton) Yes; No

M Did you attend a community college?: (radiobutton) Yes; No

If yes, then: Please enter the name of the community college: (text field)

M Did you take any geosciences courses at a community college?: (radiobutton) Yes; No

M Which of the following allowed you to be successful in transferring from a two-year college to a four-year university?: (Check boxes) academic advisor, transferred courses, faculty advisor/mentor, friends, family, personal motivation, other

M Do you have an Associate's degree?: (radiobutton) Yes; No

M Which of the following courses did you take?: (checkboxes; text field) College Algebra; Statistics; Calculus I; Calculus II; Calculus III; Linear Algebra; Differential Equations; Quantitative/Computational Methods; Chemistry; Algebra-based Physics; Calculus-based Physics; Other, please specify:

M Did you participate in any geoscience clubs, school groups, societies, etc. while during your undergraduate and/or graduate degrees?: (radiobutton) Yes; No

If yes, then: Please provide the names of these organizations: (text box)

Degree Information

M Please specify the degree type you are receiving (if you received a BS/MS degree, specify "MS"): (drop down) BA; BS; MA; MS; PhD

M What year did you begin your studies at this college/university? : (drop down) range from 1970-2014

Overall Grade Point Average (x.xx): (text field)

Geosciences Grade Point Average (x.xx) : (text field)

If BA or BS is selected:

M Specify your major: (drop down, text field) Astronomy; Atmospheric Science; Chemical Engineering; Civil Engineering; Earth Science; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geological/Geophysical Engineering; Geology; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Planetary Sciences; Soil Science; Other:

Please specify your minor or second major: (drop down, text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

If MA or MS is selected:

M Specify your geosciences research focus: (drop down, text field) Astronomy; Atmospheric Science; Chemical Engineering; Civil Engineering; Earth Science; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geological/Geophysical Engineering; Geology; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Planetary Sciences; Soil Science; Other:

M Specify your major for your UNDERGRADUATE degree: (drop down, text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

Specify your minor (or second major) of your UNDERGRADUATE degree: (drop down, text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering;

Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

If PhD is selected:

M *Specify your geosciences research focus:* (drop down, text field) Astronomy; Atmospheric Science; Chemical Engineering; Civil Engineering; Earth Science; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geological/Geophysical Engineering; Geology; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Planetary Sciences; Soil Science; Other:

M *Specify your major for your UNDERGRADUATE degree:* (drop down, text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

Specify your minor (or second major) of your UNDERGRADUATE degree: (drop down, text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

Specify the degree field for your MASTER'S degree: (drop down, text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

Financial Aid

M *Did you receive financial aid while you were studying at our institution:* (radiobutton) Yes; No

If yes, then: *Please check all the kinds of aid you received:* (checkboxes; text field) Student Loans; Research Assistantship; Teaching Assistantship; Work Study; Federal Grant; Institutional Scholarship/Grant; External Scholarship/Grant; Other:

Decision Points

M *In 1-2 sentences, please specifically describe the one most influential reason for majoring in the geosciences.:* (text field)

M *At what point did you decide to major in the geosciences?:* (radiobutton; text field)
Before beginning college/university; Undergraduate-1st year; Undergraduate-2nd year;
Undergraduate-3rd year; After transferring from community college; After receiving
undergraduate degree; Other:

M *What was the greatest obstacle to completing your degree?* (text field)

Field Experiences

M *Did you participate in a field camp (a field camp is an academic program lasting for 4 or more weeks in the summer that is primarily focused on field tools and methods)?:*

(radiobutton) Yes; No; Not yet but I am planning to attend

M *How many field courses did you take (for the purpose of this survey, a field course is defined as a course with a field component primarily covering field methods and experimentation that utilizes at least ½ of the total class time)?:* (radiobutton) 0; 1; 2; 3; 4; 5; More than 5

M *How many courses (excluding field courses) that you took contained a field experience component (for the purpose of this survey, other field experiences include field trips, field work, and other time in the field that is not included in the definitions for field camp and field course)?:* (radiobutton) 0; 1; 2; 3; 4; 5; More than 5

M *Rate the importance of your field camp, course, and/or experience to your educational and professional development:*

Field Camp: (radiobutton) Not Applicable; Not Important; Somewhat Important; Very Important

Field Course: (radiobutton) Not Applicable; Not Important; Somewhat Important; Very Important

Field Experiences (excluding field camps and field courses): (radiobutton) Not Applicable; Not Important; Somewhat Important; Very Important

Research

M *Did you have one of more research experiences?:* (radio button) No; 1; 2; 3; 4; 5; More than 5

If yes, then:

M *Did you participate in some capacity in the research program of a faculty member?:* (radiobutton) Yes; No

If yes, then: *Please briefly describe your activities in the faculty member's research:* (text box)

M *If you participated in some form of individual research in your degree program, please indicate the method of research used. Check all that apply:* (check boxes) Literature-based research; Field-based research; Lab-based research; Computer-based research; I did not participate in research; Other:

If you did participate in research: *briefly describe your research activities:* (text field)

M *Rate the importance of your research experiences to your educational and professional development:* (radiobutton) Not Applicable; Not Important; Somewhat Important; Very Important

Enrichment Experiences

M *Did you have one or more internships?:* (radiobutton) No; 1; 2; 3; more than 3

If you had one or more internships:

Please specify the name of the employer(s) where you worked as an intern: (text field)

M *Rate the importance of your internships to your educational and professional development:* (radiobutton) Not Applicable; Not Important; Somewhat Important; Very Important

Future Plans, Graduate School

Is your immediate plan to pursue a graduate or professional degree?: (radiobutton) Yes; No

If yes, please provide the following:

Name of the school you are planning to attend: (text field)

M *Degree you will be pursuing:* (radiobutton) MA; MS; PhD; MBA; MD; JD; DDS; Undecided; Other:

Degree field you will be pursuing: (drop down; text field) Astronomy; Atmospheric Science; Biological Sciences; Business; Chemical Engineering; Chemistry; Civil Engineering; Computer Science; Earth Science; Economics; Education; Engineering; English; Environmental Engineering; Environmental Science; Geochemistry; Geography; Geology; Geological/Geophysical Engineering; Geophysics and Seismology; Geoscience Education; Hydrology and Water Resource Science; Journalism; Law; Math; Medical Sciences; Meteorology; Mining and Mineral Engineering; Ocean Engineering; Oceanography; Paleontology; Petroleum Engineering; Petroleum Geology; Petrology; Physics; Planetary Science; Social Science; Soil Science; Other:

Future Plans, Employment in the Geosciences

M *Are you currently seeking work in the geosciences profession, or have you accepted a geosciences position?:* (radiobutton) Seeking employment in the geosciences; Accepted a geosciences position; No

If you are seeking work in the geosciences profession:

M *Please specify the industries where you are seeking employment:* (checkboxes; text field) 2-Year College; 4-Year University; Accommodation/Food Service; Agriculture/Forestry/Fishing; Arts/Entertainment/Recreation; Construction; Environmental Services; Health Care/Social Assistance; Information Services; Information Technology Services; K-12 Education; Federal Government; Finance; Manufacturing or Trade; Mining; Nonprofit/NGO; Oil and Gas/ Other Educational Services; Real Estate; Research Institute; State or Local Government; Transportation; Utilities; Other:

If you have accepted a geosciences position:

M *Industry:* (drop down; text field) 2-Year College; 4-Year University; Accommodation/Food Service; Agriculture/Forestry/Fishing; Arts/Entertainment/Recreation; Construction; Environmental Services; Health Care/Social Assistance; Information Services; Information Technology Services; K-12 Education; Federal Government; Finance; Manufacturing or Trade; Mining; Nonprofit/NGO; Oil and Gas/ Other Educational Services; Real Estate; Research Institute; State or Local Government; Transportation; Utilities; Other:

Employer Name: (text field)

Located in which country?: (drop down) Listing of Countries

If the United States, then: *Located in which state?:* (drop down) list of states

Did you intern with this employer?: (radiobutton) Yes; No

Base salary range: (drop down) Less than 30K; 30-40K; 40-50K; 50-60K; 60-70K; 70-80K; 80-90K; 90-100K; 100-110K; 110-120K; More than 120K

Additional compensation range (signing bonus, relocation, and/or other compensation):

(drop down) Less than \$10,000; \$10,000-\$15,000; \$15,000-\$20,000; \$20,000-\$25,000; More than \$25,000

How did you find this job?: (check boxes; text field) On-campus recruiting event/Job fair; College/University Career Center; Internet job board; Professional Society; Networking at a conference; Faculty referral; Student Organization; Through my personal contacts; Other:

Have you received multiple job offers?: (radiobutton) No; 1; 2; 3; 4; 5; More than 5

M *Are you planning on taking a professional certification/licensing exam?:* (Radiobutton) Yes; No

If yes: *Which course are you planning to take?:* (check boxes) State Geology Certification Exam; Professional Engineering License; OSHA Safety Certification course; Other:

Future Plans, Employment Outside of the Geosciences

M *Are you currently seeking work outside of the geosciences profession or have you accepted a non-geoscience position?:* (radiobutton) Yes; No

If you are seeking work outside of the geosciences profession:

M *Please specify the industries you are seeking employment:* (checkboxes; text field) 2-Year College; 4-Year University; Accommodation/Food Service; Agriculture/Forestry/Fishing; Arts/Entertainment/Recreation; Construction; Environmental Services; Health Care/Social Assistance; Information Services; Information Technology Services; K-12 Education; Federal Government; Finance; Manufacturing or Trade; Mining; Nonprofit/NGO; Oil and Gas/ Other Educational Services; Real Estate; Research Institute; State or Local Government; Transportation; Utilities; Other:

Please explain why you are seeking work outside of the geosciences profession: (text field)

If you have accepted a position outside of the geosciences position:

M *Industry:* (drop down; text field) 2-Year College; 4-Year University; Accommodation/Food Service; Agriculture/Forestry/Fishing; Arts/Entertainment/Recreation; Construction; Environmental Services; Health Care/Social Assistance; Information Services; Information Technology Services; K-12 Education; Federal Government; Finance; Manufacturing or Trade; Mining; Nonprofit/NGO; Oil and Gas/ Other Educational Services; Real Estate; Research Institute; State or Local Government; Transportation; Utilities; Other:

Employer Name: (text field)

Located in which country?: (drop down) Listing of Countries

If the United States, then: *Located in which state?:* (drop down) list of states

Did you intern with this employer?: (radiobutton) Yes; No

Base salary range: (drop down) Less than 30K; 30-40K; 40-50K; 50-60K; 60-70K; 70-80K; 80-90K; 90-100K; 100-110K; 110-120K; More than 120K

Additional compensation range (signing bonus, relocation, and/or other compensation):

(drop down) Less than \$10,000; \$10,000-\$15,000; \$15,000-\$20,000; \$20,000-\$25,000; More than \$25,000

How did you find this job?: (check boxes; text field) On-campus recruiting event/Job fair; College/University Career Center; Internet job board; Professional Society; Networking at a conference; Faculty referral; Student Organization; Through my personal contacts; Other, please specify:

Have you received multiple job offers?: (radiobutton) No; 1; 2; 3; 4; 5; More than 5

Please explain why you are seeking work outside of the geosciences profession: (text field)

Participation in Longitudinal Survey of Geosciences Graduates

We would like to contact you again in the near future for a longitudinal survey of geosciences graduates throughout their careers in order to facilitate the development of an aggregated career map that shows the many career paths geosciences graduates pursue, as well as a retrospective look at the role of community colleges in geoscience student and career pathways.

There has been very little research on student and career pathways for the geosciences. Currently, the only estimates of geosciences graduate career trajectories that exist are from 2006 from the National Science Foundation, which only focuses on graduates with their highest geoscience degree. The data estimates that approximately 35 percent of geosciences graduates at all degree levels work in geosciences occupations. The data does not show career progression of geosciences graduate cohorts over time. There is also no information that looks at the connection of community colleges to these pathways. By participating in these studies, you will be helping to provide information about education and career trajectories of geosciences graduates.

M *Would you like to participate in these studies?:* (radiobutton) Yes; No

If Yes:

Primary (permanent) email address: (text field)

Secondary email address: (text field)

Phone number: (text field)

Sharing Data With Your Department

The data from his survey will be aggregated and reported to your department and will be used for national and international level reporting. You have the option to allow your department to see your complete detailed survey responses and/or your contact info, if you so choose.

M *Would you like to release your detailed survey responses to your department?:* (radiobutton) Yes; No

M *Are you willing to share your name and contact information provided with your department?:* (radiobutton) Yes; No

Undergraduate Feedback and Response from Geology & Geophysics Faculty

Q1: recommended program changes?

- Exploration methods course (economic geology)
- *We will consider doing this, depending on the job market (currently poor)*
- Introduction to core logging, chip logging, mud logging
- *Petroleum Engineering offers a well logging course which can be counted as an upper-division elective.*
- Lack of core samples for job training/preparation
- *We are currently in discussions with Schlumberger regarding the possibility of offering industry-led, 1-credit courses during Wintermester or Maymester. Courses would stress job-related skills such as logging or use of industry software packages.*
- Paleo/plate tectonics scheduling issue *Long Term Undergraduate Planning*
Require meetings every semester. Currently we just see what fits for the up and coming semester and hope the rest works itself out. (Let's get folks graduated ASAP!)
- *Plate Tectonics is still offered in the fall, but it has been moved to a different time so that it no longer conflicts with Paleobiology.*
- *All undergraduates are required to meet with an advisor every semester in order to discuss your schedule and sign your registration form. It is important that you consider your long-term schedule at that time. 4-year plans are available for all undergraduate majors and concentrations. By fall 2014 we will have all of these compiled in an updated version of the Undergraduate Handbook. We will encourage students to use them as a means of designing individualized 4-year plans.*
- Wintermester course options – industry related (short course/seminar options... see 1st and second bullet).
- *'Volcanoes of Hawai'i' was offered for the first time during Wintermester 2014. We are working to offer more field-based Wintermester classes in the future. In addition, we are discussing the possibility of industry-led short courses (see above).*
- Separate undergrad planning for those who have taken core courses previously (change majors or second degree).
- *Meet individually with advisors. You have the opportunity to do this every semester at the advising pizza party or individually. Contact your advisor to schedule a meeting!*
- *We are planning changes to the current advising system so that all students are assigned to a faculty member familiar with their chosen concentration by the end of their sophomore year.*
- Lab cleanliness and organization (samples labeled and easy to find). Student working collection. Possibly hire student for 20hrs per week to organize and clean? The geology library isn't much help for students due to lack of organization. Honestly the labs are dirty and look somewhat unprofessional.
- *At this point, the "library" is primarily a "conference room." Access to journals is primarily online, so we have not attempted to keep our collections up to date. In fact, we have discussed removing many of the journals from the shelves. The conference room has been reorganized and cleaned out.*

- *Jochen is working with faculty to get labs cleaned and organized over the summer. We agree that organization is important, but keep in mind that these are geology classrooms. Study of rocks, minerals, cores, stream tables, and fossils is messy☺*
- Mining (or other) geological programs should be available in computer lab.
- *Programs required for coursework are available. We are working to obtain additional industry-specific software packages, but memory space on computers places some limitations on how many programs can be made available.*
- Working list of relevant non-geology courses that can be used as an elective (engineering, meteorology, P-chem, physics, math, planetary, image processing).
- *These are determined on a case-by-case basis. Note that the catalog states that electives are to be approved by your advisor. Courses relevant to your career interests are almost always approved. Addressing this in the ugrad student handbook will make this less intimidating/confusing.*
- Hydrogeology courses are needed. There are a lot of jobs in this field and no introductory course for undergrads.
- *Subsurface hydrology is a complex subject that is offered by Geological Engineering. The basic course requires Math 302 (Differential Equations) which is beyond the math background of our typical students. Faculty in Geosciences and Geologic Engineering are careful to avoid duplicating courses. All GE courses can be counted towards the upper-division elective requirement.*
- Summer offerings for field work.
- *We really don't know what this means. We offer a summer field geology class.*
- Winter field work could consist of geophysical methods/tools (LIDAR, seismic, magnetics, gravity).
- *Nor do we understand what this means. Is this a request for a hands-on geophysics class??*
- *See above regarding Wintermester courses.*
- Geostatistics needs to be changed. Very important topic, poorly delivered.
- *The course has changed substantially since spring 2012, resulting in a significant increase in student IAS scores. Bernie is on sabbatical this spring, so another version of the course is being taught by Franz. If the reviews indicate that his approach was well-received, some or all of the new format may be incorporated next year.*

Q2: What aspects should remain the same?

- Geology department events. Informal events bring together faculty and students. Icebreaker at the beginning of semester would be useful.
- *Icebreaker is a good idea!*
- Keep Ellen.
- *Ellen will be moving to Physics. This is not our choice, and it is beyond our control.*
- Plenty of opportunities for self starting students to engage in REAL research.
- *Agreed. We have taken steps to make research projects more accessible to undergraduates, but strongly feel that students should finish basic course work before undertaking research.*

- TAA positions are fantastic and benefit both the TAA and student in the course.
- *Thanks to those of you who have served as field assistants, researchers, and TAAs!*
- Progression of courses (difficulty) through degree is appropriate.
- Field methods course prepares students well. Most were better prepared than their counterparts from other universities.
- *Glad to hear it!*
- Informality of department is easing. Fridays at the pub are an example.
- *Fridays at the pub are forever.*
- Seminar is taken advantage of however some talks are incredibly boring. More folks from geology (not G.I.) should present. Relevant topics outside also (Museum/Pat, industry) would be useful.
- *The seminar is often heavy on topics of interest to the faculty person organizing it, which changes every semester. Note that fall seminar is meant to familiarize students with the variety of expertise in the department. We attempt to balance the presentations, but there are many researchers at the GI who are unfamiliar to our students. Hence we have been asking them to make presentations. Spring seminars have many outside talks, including industry, DGGs, USGS, etc.*
- Great courses: geochem, ore deposits, paleo, structure, mineralogy/petrology, tectonics, remote sensing (Anupma), field methods, field camp, paleo research course, presentation methods.
- *Thanks!*

Department changes:

- Computers need to be updated. The scanner is old and decrepit. Keyboards need to be cleaned.
- *Done! Jochen received a grant from the Technology Advisory Board to upgrade the lab. This will be accomplished over the summer.*
- Make it known conference room is open for use.
- *Do you mean the undergraduate room? The conference room is heavily used for committee meetings, faculty meetings, and classes. The undergrad room is underused! If you do not know the code, you can get it from Carrie.*
- Open the showers in the basement!!
- *We have tried, and tried, and tried. The Dean's office refuses. Your best chance of making this happen is to join forces with other student groups and take this request to the Dean.*
- Lab quality is highly dependent on the TA (especially structure).
- *This is true. We provide training and assistance to our TAs and reward good performance. We are considering adding another section of structural geology so that the TA has only one lab exercise to prepare for and grade.*
- Require geology students to take honors GEOS101.
- *Some students can't fit it into their schedules, but we are strongly recommending it for incoming majors and we have made it easier to enroll.*
- Replace broken slides and provide additional samples. One slide for a class of 15 students is not acceptable.
- *We believe this is primarily a problem in petrology, and we plan to have additional thin sections made before spring 2015.*

- Make available new basic lab supplies (old scratch plates, glass plates, dilute HCl, etc.).
- *Done! New materials are on order.*
- Make senior exit survey statistics available for the geology program (whether they received a job after graduating, income, etc.).
- *We are using a new survey designed and delivered by the American Geological Institute. It should be possible to make anonymous stats available.*
- Provide a bookshelf in geology student room that is for used textbooks.
- *There is one.*
- Have a meetings like this one at the beginning of each year and close out with one similar in May.
- *We are planning on one per year, in the spring, for the foreseeable future. That allows us to make changes during the academic year, and it allows new students to participate more fully.*

UNIVERSITY OF ALASKA FAIRBANKS
Student Learning Outcomes Assessment Plan
Geology Graduate M.S. Program

College of Natural Science and Mathematics

MISSION STATEMENT: The Department of Geology & Geophysics educates all levels of students in geological and geophysical principles through research, classroom and field-based instruction. The scholarly and research activities of the department enhance its educational programs to stimulate inquiry and develop learning skills for the next generation of geoscientists.

GOALS: To prepare graduates for careers in the geosciences by developing the technical expertise and critical thinking skills necessary to define, solve, and communicate scientific problems.

Intended Objectives/Outcomes	Assessment Criteria and Procedures	Implementation (what, when, who)
Graduates attain a level of technical ability and knowledge to function as professionals in their discipline.	Students will demonstrate their abilities and progress through presentations, manuscripts, and annual committee meetings.	<ul style="list-style-type: none"> • Annual progress reports will be reviewed by faculty to assure program goals are being met. • List of peer reviewed publications and conference presentations will be compiled and reviewed annually.
Masters graduates have performed research using technical and problem solving skills to contribute to their field.	Graduates will contribute to the peer-reviewed literature and present work at conferences.	<ul style="list-style-type: none"> • Written thesis proposals will be reviewed by faculty committees (Capstone Project or Thesis Rubric). • Oral comprehensive examinations' quality will be assessed by faculty committees on a revised oral presentation rubric. • Thesis defense quality will be assessed by audience and faculty committee (Capstone Project or Thesis Rubric)
Communication/ presentation skills are consistent with professional standards.	<p>Graduate students will have experience in giving oral presentations at conferences.</p> <p>They will gain experience preparing peer-reviewed manuscripts and development of research proposals.</p>	<ul style="list-style-type: none"> • Survey of graduate students and student committees (including oral defenses and exams) will include questions to assess their progress towards the stated objective (Capstone Project or Thesis Rubric). • List of peer reviewed publications and conference presentations will be compiled and reviewed

		<p>annually.</p> <ul style="list-style-type: none"> • We will assess the presentation/writing skills improvement for students who take the optional GEOS 675.
<p>Graduates obtain employment or continue education in the field following graduation.</p>	<p>Students will be employed or continue education in a related field within one year after graduation or receive requested mentoring towards employment or continued education.</p>	<ul style="list-style-type: none"> • Graduates will be surveyed (Graduate Student Exit Survey and Feedback Seminar) • Faculty will be surveyed annually regarding recent graduates

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Doctoral graduates demonstrate that they can independently identify a problem and devise appropriate methods for its solution, contributing original knowledge to that field.	<p>Graduates should demonstrate ability to develop new research ideas.</p> <p>Graduates will make significant contributions to the peer-reviewed literature.</p>	<ul style="list-style-type: none"> • Written thesis proposals will be reviewed by faculty committees (Capstone Project or Thesis Rubric). • Oral comprehensive examinations' quality will be assessed by faculty committees on a revised oral presentation rubric. • Thesis defense quality will be assessed by audience and faculty committee (Capstone Project or Thesis Rubric).
Communication/ presentation skills are consistent with professional standards.	<p>Graduate students will have experience in giving oral presentations at conferences.</p> <p>Preparation of peer-reviewed manuscripts and development of</p>	<ul style="list-style-type: none"> • Survey of graduate students and student committees (including oral defenses and exams) will include questions to assess their progress towards the stated objective (Capstone Project or Thesis Rubric).

	research proposals.	<ul style="list-style-type: none"> • List of peer reviewed publications and conference presentations will be compiled and reviewed annually. • We will assess the presentation/writing skills improvement for students who take the optional GEOS 675
Graduates obtain employment.	Students will be employed, continue education in a related field or receive requested mentoring towards employment or continued education.	<ul style="list-style-type: none"> • Graduates will be surveyed when they graduate (Graduate Student Exit Survey and Feedback Seminar). • Faculty will be surveyed annually regarding recent graduates.

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Masters graduates have performed research using technical and problem solving skills to contribute to their field.	Graduates will contribute to the peer-reviewed literature and present work at conferences.	<ul style="list-style-type: none"> • Written thesis proposals will be reviewed by faculty (Capstone Project or Thesis Rubric). • Oral comprehensive examinations' quality will be assessed by faculty committee on a revised oral presentation rubric. • Thesis defense quality will be assessed by audience and faculty committee (Capstone Project or Thesis Rubric). • Our goal is for masters graduates should have contributed to at least one publication or technical report.
Communication/ presentation skills are consistent with professional standards.	<p>Graduate students will have experience in giving oral presentations at conferences.</p> <p>They will gain</p>	<ul style="list-style-type: none"> • Survey of graduate students and student committees (including oral defenses and exams) will include questions to assess their progress towards the stated objective (Capstone Project

	experience preparing peer-reviewed manuscripts and development of research proposals.	<p>or Thesis Rubric).</p> <ul style="list-style-type: none"> • List of peer reviewed publications and conference presentations will be compiled and reviewed annually. • We will assess the presentation/writing skills improvement for students who take the optional GEOS 675.
Graduates obtain employment or continue education in the field following graduation.	Students will be employed or continue education in a related field within one year after graduation or receive requested mentoring towards employment or continued education.	<ul style="list-style-type: none"> • Graduates will be surveyed (Graduate Student Exit Survey and Feedback Seminar). • Faculty will be surveyed annually regarding recent graduates.

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		<p>publications and conference presentations will be compiled and reviewed annually.</p> <ul style="list-style-type: none"> • We will assess the presentation/writing skills improvement for students who take the optional GEOS 675
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2014 Graduate Student Feedback and Response from Geology & Geophysics Faculty

1. How should the program be changed?

- Classes offered in the course catalog should be taught when specified (e.g., Tectonic Geodesy, Volcanic Seismology).
- *We thoroughly agree. We are reviewing the schedule and changing some courses to “as demand warrants” to reflect uncertainties in the schedule resulting from the need to have at least 5 students enrolled in order for the class to go forward. Please be aware, however, that we may sometimes deviate from the published schedule in order to accommodate faculty on sabbatical.*
- Independent studies when offered should encompass the full curriculum of the regular course and not be an abridged version.
- *The best way to get the full experience is to enroll in the regular course. Independent studies are frequently abridged, because instructors generally do not have time to teach courses one-on-one. All independent studies require a syllabus from the instructor. If you sign up for an independent study, please review this document to make sure that it covers the content and provides the training that you need.*
- More useful program-based classes that teach you how to use software relevant to potential job fields (e.g., Vulcan, Kingdom, etc.).
- *We are in discussions with Schlumberger regarding industry software workshops or short courses, perhaps during Wintermester or Maymester. Whereas we see value to providing additional software training, we do not have room in faculty workloads for additional courses at this time.*
- Software should be taught by faculty and not self-taught by students
- *Learning to use software is important. As mentioned above, we do not have room in faculty workloads for additional courses. A solution might be for graduate students to get together and offer student-led software workshops. Graduate students that have mastered specific software packages could teach other graduate and undergraduate students the basics. The department will happily help facilitate such workshops by inviting students to lead and advertising.*
- More short courses that teach students real-world applications of techniques and programming methods taught by professionals.
- *See above regarding industry workshops.*

2. What aspects of the programs should remain as they are and NOT be changed?

- Rainer students are happy with partnerships with local industry. Encourage other advisors to reach out, too.
- *Rainer is fortunate to be in a field for which there is a local industry. For better-or-worse, many sub-disciplines in the geosciences have limited industry application. Employment opportunities is a subject that will be addressed in the up-coming graduate student handbook.*
- Geology students like that there aren't specific required classes
- *Flexibility is one of our goals with respect to graduate curricula.*
- Geophysics students like that the foundations course is required, but are somewhat unsatisfied with the content (too much stuff!).

- *Erin and Jeff substantially revised Foundations of Geophysics based on student feedback received after the first offering. Feedback for fall 2013 indicates greater satisfaction with the course, and revisions will continue to address student input.*
- GI students like the interaction with other departments over on their side of campus, but would like to interact more with the Geology department.
- *We would like this, too! A Graduate Student Association seems like one way to go. We welcome other ideas, too. Let us know how we can facilitate further interactions.*
- Like the updates made to the G&G website, but more could be added.
- *In the future, we will be getting a new website design, but it will still be up to department or CNSM staff to make updates and changes. We are facing reductions in our office staff, so the amount of time dedicated to the website is likely to decrease during the next academic year. Please bear with us as we sort out duties and responsibilities on this front. We feel that a graduate student handbook will help in this regard.*

3. How should the department be changed?

- Would like to see a new graduate student seminar loaded with information about deadlines, life in Alaska resources (costs, clothing, plane ticket pricing, PFD, Fairbanks), helpful grad school terms and definitions (what are comps?), timeline/track for graduation, introduction to the teaching faculty, and a good Q&A afterwards. Have a handout with the information presented at the seminar so students can reference it.
- *We are planning a fall Graduate Student Orientation to cover some of this information. In the past, we have found that incoming students are so overloaded with information that previous sessions that specifically addressed things like comps and timelines were either resented or quickly forgotten. Consequently, we are working to produce a Graduate Student Handbook for use by fall 2014 that covers the academic requirements of our programs. It would be great if grad students (through the Graduate Student Association) would work together to generate some FAQs regarding life in Alaska that could be posted on our website.*
- **FUNDING!** More opportunities to get funding through the school, advisors should be more up front about funding when contacting/accepting students. Help students with applying for grants.
- All valid requests. Acceptance letters are designed to be very specific about the amount of funding in hand for each student. We are currently spending every available source of funds on our graduate students. We will continue to encourage advisors and students to have funding conversations early and often.
- Form a Graduate Student Association
- *Yes! We will facilitate in any way we can, but the push must come from graduate students.*
- TA and RA positions should be advertised a semester beforehand and available to all G&G students who need funding
- *TA and RA positions are advertised early each summer (in May or June). Once we know how many positions are available to continuing students, an e-mail is circulated to all graduate students (and faculty advisors) asking for the names of students in need of funding for the upcoming academic year. Please submit your name if you lack funding. These positions are open to all graduate students, but priority is given to those with no other sources of funding and those who have not previously received funding from the*

department and especially those who have previously received high marks on student IAS evaluations. It is important to keep in mind that the principal purpose of a TA is to educate undergraduate students, not to support students without funding. Graduate students with the appropriate background for a particular course and those who have demonstrated superior performance in the past will be offered positions first.

- The part-time TA-ships didn't cover the full tuition amount required for a full-time student. People didn't like that.
- *We don't like it, either. Given that we cannot get UAF to back down on the full-time credit load for part-time TAs, we plan to offer only full-time TA positions in the future.*
- People don't like the new seminar format. The write-up style doesn't fit with most students. Some questions are irrelevant. Overall, most agree that the writing portion of seminar is not beneficial. Required attendance is enough.
- *The seminar format changes every semester, depending on the faculty member in charge of the course. Geophys faculty (who instituted the changes in the first place) are reviewing the format and considering changes.*

4. What aspects of the department should NOT be changed?

- Pub is fine.
- *Pub is forever.*
- Brooks Range Trip is a great way to get the G&G group together and for new students to begin bonding early on. More trips/interaction is needed to ensure lasting friendships ("I know that guy from a trip I went on a year ago. Kinda remember them. "). Possibly offer an orphan Thanksgiving break trip/outing, Spring Break trip/outing?
- *We are working to offer more Wintermester and Maymester field courses.*
- *This is another case where a graduate student organization or active participation in the geoscience club would be of benefit to graduate students.*

WISH LIST (Stuff we don't know where to put)

- People don't want smaller desks with coat closets, but big desks with nice chairs
- *Sorry you don't like the new furniture. The Dean's office purchased it about 3 years ago to replace the rickety bookcases and random assortment of surplus desks and partitions that filled the office. Given that the furniture is new, the Dean's office is not going to replace it anytime soon. We are working to get newer chairs, but we can't afford to buy brand new ones at this time.*
- Student computers on every desk
- *We have a computer lab. You will need to supply your own personal computer. It only makes sense that you possess the programs, data storage, and such that you need on your own computer.*
- CLEAN THE KEYBOARDS IN THE COMPUTER LAB
- *We bought new ones instead, and Jochen has a plan to keep them clean so this doesn't happen again.*
- Drinkable water for all (get one of the standalone filtration systems that are all over campus these days)
- *A water filter mysteriously appeared on the second floor of Reichardt during the spring 2014 semester. It is not quite free. I think it costs 25 cents. If you want filtration systems in other locations, students can apply for this through the Sustainability Office.*

- Somehow bring back the Reichardt showers
- They have actually never been used, because the Dean's office refuses to open them up. We have lobbied for this several times, with no luck. The best way to change the Dean's mind is to put in a joint request from students in the Reichardt Building. It would be wise to look at the GI model for a plan to keep things clean. *This is still another situation where an active geoscience club could potentially make changes that faculty can't.*
- TA offices need new wiring for the lights in the TA grad office (they say the lights burn out often), and more than one Ethernet port for the entire grad office would be nice.
- *Duly noted. We will look into this over the summer.*
- Updated outlets like the ones in the study space on the third floor
- *Those outlets are new. Please explain what is insufficient about the existing outlets.*
- G&G students would like more grad student space
- *Space in Reichardt is at a premium for students and faculty. We have no more space at our disposal.*