

Assessment: Program Four Column



Program (ALP) - Geology MS

College or Division: Arts and Sciences

Department: Biology, Geology and Physical Sciences

Assessment Coordinator: Dr. Elizabeth A. Measures

Statement of Purpose: Students must successfully complete either, A) 30 semester credit hours of geology including successfully defending a thesis, or B) 36 semester credit hours of coursework in geology and a comprehensive written exam in order to earn the MS degree. Additionally, BOTH OPTIONS require completion of a comprehensive oral examination before a degree is awarded. The graduate geology curriculum is designed to meet learning outcomes within four areas: 1) sedimentary geology, 2) igneous/metamorphic geology and structure/tectonics, 3) geological field, lab and research techniques/technology, and 4) communication in both oral and written format. Toward achieving this goal, students must take at least one graduate course from each major area of study (SLO 1 through 3 above), before concentrating on an area of interest. Learning objectives are built through the knowledge gained from the course content covered in the thirty to thirty-six hours taken. All courses are designed to train students in their respective areas. As with the undergraduate program, the importance of field and laboratory experiences are emphasized, encouraging the students with outdoor learning opportunities, modern lab techniques, and field experiences to enhance the learning environment. Students gain additional mastery of these program learning objectives through the process and ultimate completion of a Master's thesis. The process of designing a study, applying the scientific method, implementing methodology, analyzing results, and writing up and presenting their findings is a powerful tool toward preparing students for a future in geology. For this reason, all MS students are strongly encouraged to complete a thesis, with the non-thesis option being the path least encouraged.

The mission of the Geology M.S. Program, in the geologically diverse Big Bend region, is to provide Sul Ross State University Geology graduate students education and research opportunities that is comprehensive, accessible and life changing through teaching and research experience that is of the highest quality.

Annual Updates

2017 - 2018

Evidence of Improvement from Previous Assessment Cycle: For the 2017-2018 cycle, of the 8 assessments (covered in the 4 SLO's), 7 met their target goal and 1 had no results since the courses used for assessment were not taught during the cycle. This is an improvement over the previous cycle where there was one assessment that did not meet the target goal. All 7 assessments actually exceeded their target goals for this cycle. However, only 3 of the 7 assessments showed an increase over the previous cycle (one increased by 1 percentage point, another increased by 2 percentage points and the last one increased by 10 percentage points; one of these assessments went from "Not Met" to "Met"), and the remaining 4 assessments showed a decrease from the previous cycle (2 decreased by 2 percentage points, one decreased by 4 percentage points and the last one decreased by 9 percentage points).

There was improvement in the current cycle (2017-2018) over the previous cycle (2016-2017) specifically in the following:

1) SLO 1A went from 78% in 2016-2017 to 88% in this cycle.

Assignments coupled to samples, and quizzes coupled to homework, seems to have been successful in having students examine geological material and read text/articles prior to exams. Student learning appears to have been enhanced through these measures.

2) SLO 1B went from 87% in 2016-2017 to 88% in this cycle.

Having the students read texts/articles related to sedimentary geology seems to have been successful in having them perform better to sedimentary questions asked during the thesis defense. Student learning appears to have been enhanced through these measures.

3) SLO 3A went from 88% in 2016-2017 to 90% in this cycle.

Having the students do a field or lab research term project utilizing new and/or different techniques and technologies seems to have been successful in enhancing student learning.

Review History: Reviewer #1 Name, Date, and Comments: Dr. Eric Funasaki, August 2, 2018

Review History: Reviewer #2 Name, Date, and Comments: Dr. Chris Herrera, August 2, 2018

Review History: Reviewer #3 Name, Date, and Comments: Alejandra Villalobos-Melendez, August 2, 2018

2016 - 2017

Evidence of Improvement from Previous Assessment Cycle: For this assessment cycle (2016-2017) of the 4 SLO's and their parts, all met the target goal except for SLO 1A. There was improvement in the current assessment cycle (2016-2017) over the previous assessment cycle (2015-2016) specifically in the following:

1) SLO 3A went from 87% in 2015-2016 to 88% in 2016-2017. This may be a result of the use of more and different technology in the graduate courses and/or more term research projects tied to the courses.

2) SLO 4A went from 87% in 2015-2016 to 92% in 2016-2017. This may be a result of the students doing some preliminary field work on their proposed research project and using this experience to refine their written proposal and giving them more confidence for the oral proposal.

Review History: Reviewer #1 Name, Date, and Comments: Bill Green, June 14, 2017

Review History: Reviewer #2 Name, Date, and Comments: Lorie Rubenser, June 14, 2017

2015 - 2016

Evidence of Improvement from Previous Assessment Cycle: For this assessment cycle (2015-2016) of the 4 SLO's and their parts, all met the target goal except for SLO 2A in which there was no data. This is similar to the previous assessment cycle (2014-2015) where all were met, even 2A.

There was improvement in the current assessment cycle (2015-2016) over the previous assessment cycle (2014-2015) specifically in the following:

1) SLO 1B went from 80% in 2014-2015 to 90% in 2015-2016.

2) SLO 2B went from 80% in 2014-2015 to 88% in 2015-2016.

3) SLO 3B went from 80% in 2014-2015 to 92% in 2015-2016.

4) SLO 4A went from 80% in 2014-2015 to 87% in 2015-2016.

5) SLO 4B went from 80% in 2014-2015 to 92% in 2015-2016.

All of these increased as a result of the use of the rubric designed to evaluate geologic knowledge during the thesis defense or the rubric designed to evaluate the written/oral thesis proposal and written/oral thesis defense. Prior to use of the rubrics, students had been given the minimum acceptable grade (80%) for a graduate student.

Since the Geology Master's program emphasizes completion of a thesis, the rubrics are valuable and can be used to better evaluate the thesis process.

2014 - 2015

Evidence of Improvement from Previous Assessment Cycle: The SLO's for the 2014-2015 Assessment Cycle are substantially and significantly different from those of the 2013-2014 Assessment Cycle. As a result of having different SLO's, comparison of the two Assessment Cycles is not feasible.

However, by changing the SLO's the program is able to have results that can be reported, whereas with the 2013-2014 SLO's many of them did not have results because those SLO's were not being covered during the assessment cycle.

In spite of the differences, there appears to be an improvement in having students correcting their thesis and submitting a final version of the thesis during the semester in which they orally defend.

Review History: Reviewer #1 Name, Date, and Comments: Dr. Chris Ritzi, June 28, 2015

Review History: Reviewer #2 Name, Date, and Comments: Dr. Jay Downing, August 7, 2015

Review History: Reviewer #3 Name, Date, and Comments: Dr. Christopher Estepp, November 2, 2015

Review History: Reviewer #4 Name, Date, and Comments: Dr. Jeanne Qvarnstrom, March 14, 2016

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
SLO 1 - The student will be able to apply diverse bodies of Geologic information in the area of advanced sedimentary geology. Outcome Status: Active	Departmental Comprehensive Exam - a. Comprehensive final exams that cover elements of advanced sedimentary geology are administered in the relevant courses: GEOL 5320 Advanced Paleontology, GEOL5326 Carbonate Petrology, and GEOL 5328 Advanced Sedimentation. These courses are offered on a rotation and because of this rotation the same class will not occur in successive academic assessment cycles. Therefore any of these 3 courses will be used as an assessment and will be considered equal. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%.	Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 3 students completing GEOL 5328 in Spring 2018. The average score on the comprehensive final exam, composed of questions over sedimentation (an area of advanced sedimentary geology), was 88%. The average on the assessment tool met (exceeded) the target goal. Students showed competence in the area of advanced sedimentary geology. (07/20/2018)	Use of Results: The goal was met (exceeded), possibly as a result of an assignment/quiz tied to samples and homework. Samples, homework and a library research project will continue to be modified to improve the course. Powerpoints and videos will also be modified and improved. (07/20/2018)
		Reporting Period: 2016 - 2017 Conclusion: Target Not Met Results from 6 students completing GEOL 5326 in Spring 2017. The average score on the comprehensive final exam, composed of questions over carbonate petrology (an area of advanced sedimentary geology), was 78%. The average on the assessment tool did not met the target goal. Possible contributing factors to the low performance: 1) Students did not examine the samples prior to exams, and 2) students did not complete homework assignments. (05/30/2017)	Use of Results: Based on the results, some or all of the following modifications will be implemented: 1) attaching an assignment to the samples so they will be examined prior to exams, and 2) having quizzes over homework assignments so that the homework will be completed and turned in prior to the quiz. (05/30/2017)
		Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 7 students completing GEOL 5320 in Spring 2016. The average score on the comprehensive final exam, composed of questions over paleontology (an area of advanced sedimentary geology), was 84%. The average on the assessment tool met (exceeded) the target goal. Students showed competency in the area of advanced sedimentary geology. (08/09/2016)	Use of Results: Even though the goal was met (exceeded), some or all of the following will be implemented: 1) modification of homework assignments, 2) expansion of samples examined/studied, and 3) readings in technical journals on recent findings in the field of advanced sedimentary geology. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met GEOL 5328 was the advanced sedimentary geology course	Use of Results: Even though the goal was exceeded, the professor teaching these courses (the senior

Student Learning Outcomes	Assessment Methods	Results	Use of Results
		offered during this academic assessment cycle. Results from 9 students taking the course: The average on the comprehensive final exam was 86%, which was composed of questions in advanced sedimentary geology (specifically sedimentation). Discussion of Results: The average on the assessment exceeded the target goal. Students show competence in the area of advanced sedimentary geology. (03/30/2016)	faculty in the program with 35 years of teaching experience, now half-time) is conscientious in keeping the material current. The professor always adds new homework assignments and modifies older assignments. Also, the target goal may be set too low and could be re-evaluated for the next academic assessment cycle. (03/30/2016)
	Supervisor Evaluation - b. Thesis defense, GEOL 6302 Thesis Defense, is the summative assessment of the application of knowledge that covers advanced sedimentary geology. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%. Graduate students are expected to do "A" and "B" level work; a "C" is not acceptable and not considered passing. Therefore the minimum passing score would be a "B" which equates to a minimum of 80%.	Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2017-2018 assessment cycle. The average score was 88% on a series of advanced sedimentary geology questions asked as part of the thesis defense. Questions covered 1) thesis-specific sedimentary geology material and 2) general knowledge of sedimentary geology. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of advanced sedimentary geology. (07/20/2018)	Use of Results: The goal was met (exceeded) possibly as a result of the students all doing research on sedimentary geology related projects. Students were told to examine certain sedimentary geology books and articles during the semester they defended. This will continue and probably more books/articles will be added. The Geology program faculty did not meet but that should happen in the next cycle. (07/20/2018)
		Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 2 students completing GEOL 6302 in 2016-2017 assessment cycle. The average score was 87% on a series of advanced sedimentary geology questions asked as part of the thesis defense. Questions covered 1) thesis-specific sedimentary geology material and 2) general knowledge of sedimentary geology. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of advanced sedimentary geology. (05/30/2017)	
		Related Documents: SLO 1b, 2b, 3b rubric.pdf	Use of Results: The advanced sedimentary geology evaluation rubric was modified slightly but adequately demonstrates that students that have completed a thesis are knowledgeable in this area. A list of suggested readings over advanced sedimentary geology may be compiled and distributed to students preparing for their thesis defense. The current target goal may be set too low but the Geology program faculty have yet to discuss a new target goal. (05/30/2017)

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
		Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2015-2016 assessment cycle. The average score on a series of advanced sedimentary geology questions asked as part of the thesis defense was 90%. The graduate students showed competence in the area of advanced sedimentary geology. (08/09/2016)	Use of Results: Based on the results, the advanced sedimentary geology evaluation rubric, created for the 2015-2016 evaluation cycle appears to function adequately. However, feedback from the faculty using the evaluation rubric will be incorporated into the following cycle. Geology faculty may also discuss a new target goal; the current target goal may be set too low. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met Results from 1 student completing GEOL 6302: During the defense, the graduate student was asked questions covering aspects of advanced sedimentary geology. The student was able to answer successfully as determined by the thesis committee (assuming a minimum passing score of 80%). The graduate student successfully defended his/her thesis as determined by the thesis committee. There were NO students that were unsuccessful. Discussion of Results: The questions over advanced sedimentary geology specifically related to the student's topic of study; there were few general questions over advanced sedimentary geology. The evaluation method was based on a minimal rubric (pass/fail). (03/30/2016)	Use of Results: Based on the results, a standardized set of questions over advanced sedimentary geology will be created as well as an evaluation rubric so the score can be quantified so it corresponds to the new SLO and goal (Target for Success). However, it does appear that students are able to apply the course work to their research. Also, the target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016)
SLO 2 - The student will be able to apply diverse bodies of Geologic information in the areas of advanced igneous/metamorphic processes, structure and tectonics. Outcome Status: Active	Project - a. Term projects that cover elements of advanced igneous processes, metamorphic processes, structure and tectonics are administered in the relevant courses: GEOL 5306 Advanced Structural Methods, GEOL	Reporting Period: 2017 - 2018 Conclusion: N/A None of the specified courses were offered during the 2017-2018 assessment cycle. Furthermore, there were no Special Topics (GEOL 5304) offered that covered the subject matter of advanced igneous processes, metamorphic processes, structure and tectonics. (07/20/2018)	Use of Results: The Geology program is still lacking a faculty member with a PhD who specializes in the area of advanced structure and tectonics. A course in the area of advanced igneous/metamorphic/structure/t

Student Learning Outcomes	Assessment Methods	Results	Use of Results
	5308 Advanced Igneous Petrology, GEOL 5312 Volcanology, GEOL 5316 Trace Elements in Magmatic Systems, and GEOL 5304 Special Topics (as applicable). These courses are offered on a rotation and because of this rotation the same class will not occur in successive academic assessment cycles. Therefore any of these 5 courses will be used as an assessment and will be considered equal. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%.		ectonic processes was not offered during this cycle since the faculty had to cover other courses. During this cycle the faculty member that specialized in paleontology/sedimentary geology retired. They are going to be replaced in the next cycle (2018-2019) by someone with the same specialty. Since the program has several graduate students concentrating in paleontology/sedimentary geology, the decision was made to hire someone with the same specialty. The program will still be lacking a PhD faculty member with expertise in advanced igneous/metamorphic/structure/tectonic processes, however, an effort will be made to teach a course in this area. The Geology faculty need to meet in the next cycle and discuss options for consistently handling this area. (07/20/2018)
		Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 1 student completing GEOL 5304 in 2016-2017 assessment cycle. The average score on the term project, applying XRF analysis to interpret igneous petrogenesis (an area of advanced igneous processes), was 90%. The average on the assessment tool met (exceeded) the target goal. The student showed competence in the area of advanced igneous processes, metamorphic processes, structure and tectonics. (05/30/2017)	Use of Results: Despite the Geology program being short-handed and unable to hire a geologist with a specialization in the area of structure and tectonics a course in the area of advanced igneous processes was offered during this cycle. The Geology program will continue to ask the Sul Ross Administration for permission to hire another faculty member

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
			Even though the target goal was met (exceeded), courses (when offered) will continue to be improved with homework assignments, new and different samples for study, and continued readings in geology technical journals. (05/30/2017)
		Reporting Period: 2015 - 2016 Conclusion: N/A None of the specified courses were offered during the 2015-2016 assessment cycle. Furthermore, there were no Special Topics (GEOL 5304) offered that covered the subject matter of advanced igneous processes, metamorphic processes, structure and tectonics. (08/09/2016)	Use of Results: The Geology program has been missing a geologist who specializes in the area of advanced igneous processes, metamorphic processes, structure and tectonics for 4 years. The previous faculty member with this expertise retired in May 2012. To date the Geology program has not been allowed to advertise for a replacement because of university-wide budget constraints. The Geology program will continue to ask the Sul Ross Administration for permission to advertise for another faculty member. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met GEOL 5304 Special Topics (Tectonics) was the advanced igneous/ metamorphic processes, structure and tectonics course offered during this academic assessment cycle. Results from 5 students taking the course: The graduates were required to do a written term project; the average on the assessment was 92%. The project was in the area of tectonics. Discussion of Results: The average on the assessments exceeded the target goal. Students show competence in the area of advanced	Use of Results: Even though the target goal was exceeded, the instructor of Tectonics will make the course more robust by adding homework assignments, journal readings and discussions. However, the program needs to move toward offering these courses more often. The courses dealing with this SLO are very seldom taught because

Student Learning Outcomes	Assessment Methods	Results	Use of Results
	Written Assignment - b. Thesis defense, GEOL 6302 Thesis Defense, is the summative assessment of the application of knowledge that covers advanced igneous processes, metamorphic processes, structure and tectonics. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%. Graduate students are expected to do "A" and "B" level work; a "C" is not acceptable and not considered passing. Therefore the minimum passing score would be a "B" which equates to a minimum of 80%.	igneous/ metamorphic processes, structure and tectonics. (03/30/2016) Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2017-2018 assessment cycle. The average score was 85% on a series of questions over advanced igneous/metamorphic processes, structure and tectonics asked as part of the thesis defense. Questions covered 1) thesis-specific igneous/metamorphic material as well as structure and tectonic material, and 2) general knowledge of igneous/metamorphic processes, structure and tectonics. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of advanced igneous processes, metamorphic processes, structure and tectonics. (07/20/2018) Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 2 students completing GEOL 6302 in 2016-2017 assessment cycle. The average score was 87% on a series of questions over advanced igneous/metamorphic processes, structure and	the faculty member who specialized in this area retired 3 years ago (May 2012). To date, the program has not been able to advertise for a replacement for this position. Also, the target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016) Use of Results: The goal was met (exceeded) possibly as a result of the students being told to examine certain books and articles on igneous/metamorphic/structure/tectonic processes during the semester they defended. This will continue and probably more books/articles will be added. The score is 2 percentage points lower than previous cycle possibly because two of the students that defended had left Sul Ross to be gainfully employed and had been away from academia for at least a semester. This may need to be watched in the future to see if working and writing a thesis are not compatible. The Geology program faculty did not meet but that should happen in the next cycle. (07/20/2018) Use of Results: The advanced igneous/metamorphic, structure and tectonics evaluation rubric was modified slightly but adequately demonstrates that students that have completed a

Student Learning Outcomes	Assessment Methods	Results	Use of Results
		tectonics asked as part of the thesis defense. Questions covered 1) thesis-specific igneous/metamorphic material as well as structure and tectonic material, and 2) general knowledge of igneous/metamorphic processes, structure and tectonics. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of advanced igneous processes, metamorphic processes, structure and tectonics. (05/30/2017) Related Documents: SLO 1b, 2b, 3b rubric.pdf	thesis are knowledgeable in this area. A list of suggested readings over advanced igneous/metamorphic processes, structure and tectonics may be compiled and distributed to students preparing for their thesis defense. The current target goal may be set too low but the Geology program faculty have yet to discuss a new target goal. (05/30/2017)
		Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2015-2016 assessment cycle. The average score on a series of questions over advanced igneous processes, metamorphic processes, structure and tectonics asked as part of the thesis defense was 88%. The graduate students showed competence in the area of advanced igneous processes, metamorphic processes, structure and tectonics. (08/09/2016)	Use of Results: Based on the results, the advanced igneous processes, metamorphic processes, structure and tectonics evaluation rubric, created for the 2015-2016 evaluation cycle appears to function adequately. However, feedback from the faculty using the evaluation rubric will be incorporated into the following cycle. Geology faculty may also discuss a new target goal; the current target goal may be set too low. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met Results from 1 student completing GEOL 6302: During the defense, the graduate student was asked questions covering aspects of advanced igneous/metamorphic processes, structure and tectonics. The student was able to answer successfully as determined by the committee (assuming a minimum passing score of 80%). The graduate student successfully defended his/ her thesis as determined by the thesis committee.	Use of Results: Based on the results, a standardized set of questions over advanced igneous/metamorphic processes, structure and tectonics will be created as well as an evaluation rubric so the score can be quantified so it corresponds to the new SLO and goal (Target for Success).

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		There were NO students that were unsuccessful. Discussion of Results: The questions over advanced igneous/ metamorphic processes, structure and tectonics specifically related to the student's topic of study; there were few general questions. The evaluation method was based on a minimal rubric (pass/fail). (03/30/2016)	However, it does appear that students are able to apply the course work to their research. The target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016)
SLO 3 - The student will be able to apply diverse bodies of Geologic information to field and lab research and techniques. Outcome Status: Active	Project - a. Term projects that cover elements of field and lab research and techniques are administered in the relevant courses: GEOL 5401 Remote Sensing, GEOL 5402 Interdisciplinary Geographic Information Systems, GEOL 5403 Advanced Geographic Information Systems, or GEOL 5304 Special Topics (as applicable). These courses are offered on a rotation and because of this rotation the same class will not occur in successive academic assessment cycles. Therefore any of these 4 courses will be used as an assessment and will be considered equal. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%.	Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 12 students completing GEOL 5402 in Fall 2017. The average score on the term project, which required knowledge of GIS field and lab techniques, was 90%. The average on the assessment tool met (exceeded) the target goal. Students showed competency in the area of field and lab research and techniques. (07/20/2018)	Use of Results: The goal was met (exceeded). New techniques and technology for data collection and analysis (LiDAR, GIS, GPS, drones) will continue to be incorporated in as many courses as possible through some form of project, either field exercises or lab research. This will always be addressed since it is fundamental to geologic studies to conduct research in the field using the best techniques/technologies available, and to continue that research in the lab also using the best techniques/technologies. Students will continue to be given hands-on experience with real-world geologic problems. (07/20/2018)
		Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 18 students completing GEOL 5402 in Fall 2016. The average score on the term project, which required knowledge of GIS field and lab techniques, was 88%. The average on the assessment tool met (exceeded) the target goal. Students showed competency in the area of field and lab research and techniques. (05/30/2017)	Use of Results: Even though the target goal was met (exceeded) field and lab research and techniques will continue to be expanded by continued use of new technology for data collection and analysis. Each course, even those not specified for this SLO, should increase hands-on use of technology and a small research project.

Student Learning Outcomes	Assessment Methods	Results	Use of Results
			(05/30/2017)
		Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 6 students completing GEOL 5402 in Fall 2015. The average score on the term project, which required knowledge of GIS field and lab techniques, was 87%. The average on the assessment tool met (exceeded) the target goal. Students showed competency in the area of field and lab research and techniques. (08/09/2016)	Use of Results: Even though the target goal was met (exceeded), field and lab research and techniques will be expanded by continued use of drones for data collection and computer analysis of the data. Furthermore, individual courses may concentrate on one area/topic (such as hydrology) each semester. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met GEOL 5402 was the field and lab research and techniques course offered during this academic assessment cycle. Results from 10 students taking the course: The graduates were required to do a term project; the average on the assessment was 87%. The project was in the area of GIS field and lab research and techniques. Discussion of Results: The average on the assessment exceeded the target goal. Students show competence in the area of field and lab research and techniques. (03/30/2016)	Use of Results: Even though the target goal was exceeded, the professor teaching these courses (the second senior faculty in the program with 20 years of teaching experience) will make the course more robust by adding new exercises and incorporating drones and LIDAR into the course. The professor is conscientious in keeping the material current. Also, the target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016)
	Written Assignment - b. Thesis defense, GEOL 6302 Thesis Defense, is the summative assessment of the application of knowledge that covers field and lab research and techniques. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%.	Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2017-2018 assessment cycle. The average score was 90% on a series of questions over field research and techniques, as well as lab research and techniques asked as part of the thesis defense. Questions covered 1) thesis-specific field and lab techniques as well as research methodology, and 2) general knowledge of field and lab research and techniques. The average on the assessment tool met (exceeded) the	Use of Results: The goal was met (exceeded) probably as a result of 1) the graduate student having field and lab experience through course-work, and more importantly 2) because the major advisor worked closely with each student in the field and lab. Field and lab research in courses will be continued. Advisors working with graduate students on their thesis

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	Graduate students are expected to do "A" and "B" level work; a "C" is not acceptable and not considered passing. Therefore the minimum passing score would be a "B" which equates to a minimum of 80%.	target goal. The students showed competence in the area of geologic research in the field and lab and geologic lab and field techniques. (07/20/2018)	research, in the field and lab, will continue. The score is 2 percentage points lower than previous cycle possibly because two of the students that defended had left Sul Ross to be gainfully employed and had been away from academia for at least a semester. This may need to be watched in the future to see if working and writing a thesis are not compatible. The Geology program faculty did not meet but that should happen in the next cycle. (07/20/2018)
		Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 2 students completing GEOL 6302 in 2016-2017 assessment cycle. The average score was 92% on a series of questions over field research and techniques, as well as lab research and techniques asked as part of the thesis defense. Questions covered 1) thesis-specific field and lab techniques as well as research methodology, and 2) general knowledge of field and lab research and techniques. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of geologic research in the field and lab and geologic lab and field techniques. (05/30/2017) Related Documents: SLO 1b, 2b, 3b rubric.pdf	Use of Results: The field and lab research and techniques evaluation rubric was modified slightly but adequately demonstrates that students that have completed a thesis are knowledgeable in this area. The current target goal may be set too low but the Geology program faculty have yet to discuss a new target goal. (05/30/2017)
		Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2015-2016 assessment cycle. The average score on a series of questions over field and lab research and techniques asked as part of the thesis defense was 92%.	Use of Results: Based on the results, the field and lab research and techniques evaluation rubric, created for the 2015-2016 evaluation cycle appears to function adequately. However, feedback from the faculty using

Student Learning Outcomes	Assessment Methods	Results	Use of Results
		The graduate students showed competence in the area of field and lab research and techniques. (08/09/2016) Reporting Period: 2014 - 2015 Conclusion: Target Met Results from 1 student completing GEOL 6302: During the defense, the graduate student was asked questions covering aspects of field and lab research and techniques. The student was able to answer successfully as determined by the committee (assuming a minimum passing score of 80%). The graduate student successfully defended his/ her thesis as determined by the thesis committee. There were NO students that were unsuccessful. Discussion of Results: The questions over field and lab research and techniques specifically related to the student's topic of study; there were few general questions. The evaluation method was based on a minimal rubric (pass/fail). (03/30/2016)	the evaluation rubric will be incorporated into the following cycle. Geology faculty may also discuss a new target goal; the current target goal may be set too low. (08/09/2016) Use of Results: Based on the results a standardized set of questions over field and lab research and techniques will be created and an evaluation rubric created so the passing score can be quantified so it corresponds to the new SLO and goal (Target for Success). It does appear that students are able to apply the course work to their research. The target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016)
SLO 4 - The student will be able to communicate diverse bodies of Geologic information through the standard scientific format of an oral presentation based on a written paper. Outcome Status: Active	Written Assignment - a. Thesis proposal, GEOL 6301 Thesis Proposal, is the summative assessment of communicating an original research topic through the scientific format of an oral presentation based on a written paper. The graduate student presents the topic they will study for their MS to their thesis committee in a lecture/oral format; the presentation is based on the written thesis proposal the graduate student has submitted to their thesis committee. The thesis committee determines	Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 6 students completing GEOL 6301 in 2017-2018 assessment cycle. The average score on the written and oral proposal was 83%. The average on the assessment tool met (exceeded) the target goal. Students were able to submit an acceptable written summary of their proposed masters research. Students were also able to orally present a summary of their proposed masters research. The graduate students showed competence in the area of scientific communication. (07/20/2018)	Use of Results: The goal was met (exceeded) probably as a result of 1) the graduate student having report writing and presentation experience through course-work, and more importantly 2) because the major advisor worked with each student on the written proposal and oral presentation. The score is 9 percentage points lower than previous cycle possibly because 1) several students had some difficulty with correctly citing and referencing previous work, and 2) several students had

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
	whether the graduate student has successfully proposed (adequately explained/ communicated both orally and in writing) their potential MS research topic. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%. Graduate students are expected to do "A" and "B" level work; a "C" is not acceptable and not considered passing. Therefore the minimum passing score would be a "B" which equates to a minimum of 80%.	Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 2 students completing GEOL 6301 in 2016-2017 assessment cycle. The average score on the written and oral proposal was 92%. The average on the assessment tool met (exceeded) the target goal. Students were able to submit an acceptable written summary of their proposed masters research. Students were also able to orally present a summary of their proposed masters research. The graduate students showed competence in the area of scientific communication. (05/30/2017) Related Documents: SLO 4a rubric.pdf	some difficulty in determining /expressing the purpose of their research. A seminar course in research techniques has been an optional course in the past. It may need to be included as a required course to fix these problems. The Geology program faculty did not meet but that should happen in the next cycle. (07/20/2018)
		Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 5 students completing GEOL 6301 in 2015-2016 assessment cycle. The average score on the written and oral proposal was 87%. Students were able to submit an acceptable written summary of their proposed masters research. Students were also able to orally present a summary of their proposed masters research. The graduate students showed competence in the area of	Use of Results: The evaluation rubric for the written research proposal and oral presentation of the proposal was modified slightly but adequately demonstrates that students can communicate their intended research topic and methodology to their thesis committee and fellow geology students. The rubric will be re-examined to see if any other aspects of scientific communication can be teased out. The current target goal may be set too low but the Geology program faculty have yet to discuss a new target goal. (05/30/2017)
			Use of Results: Based on the results, the proposal evaluation rubric, created for the 2015-2016 appears to function adequately. However, feedback from the faculty using the proposal evaluation rubric will be incorporated into the following cycle. Geology faculty may also discuss a

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		scientific communication. (08/09/2016)	new target goal; the current target goal may be set too low. (08/09/2016) Use of Results: Based on the results, the oral presentation based on a written paper evaluation rubric, created for the 2015-2016 evaluation cycle appears to function adequately. However, feedback from the faculty using the evaluation rubric will be incorporated into the following cycle. Geology faculty may also discuss a new target goal; the current target goal may be set too low. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met Results from 7 students completing GEOL 6301: All the students successfully communicated their topic of research for their MS by adequately explaining their research topic in an oral presentation which was based on submission of an acceptable written proposal (assuming a minimum passing score of 80%). (03/30/2016)	Use of Results: Based on the results, a standardized rubric evaluating the MS research topic proposal, both oral presentation and written paper, will be created so the score can be quantified so it corresponds to the new SLO and goal (Target for Success). Also, the target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016)
	Presentation/Performance - b. Thesis defense, GEOL 6302 Thesis Defense, is the summative assessment of communicating original research results through the standard scientific format of an oral presentation based on a written paper. The graduate student presents their research results to their thesis committee in a lecture/ oral	Reporting Period: 2017 - 2018 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2017-2018 assessment cycle. The average score on the evaluation of the thesis, both written and oral presentation, was 84%. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of communicating original research results through the	Use of Results: The goal was met (exceeded) probably as a result of 1) the graduate student having report writing and presentation experience through course-work, 2) the graduate student having gone through a similar process on their thesis proposal, and more importantly 3) because the major advisor worked with each student

<i>Student Learning Outcomes</i>	<i>Assessment Methods</i>	<i>Results</i>	<i>Use of Results</i>
	format; the presentation is based on the written thesis the graduate student has submitted to their thesis committee. The thesis committee determines whether the graduate student has successfully defended (adequately explained/ communicated both orally and in writing) their MS research results. Target: The goal of the program is to improve students' learning achievement to a level so that the minimum average score on the designated assessment is 80%. Graduate students are expected to do "A" and "B" level work; a "C" is not acceptable and not considered passing. Therefore the minimum passing score would be a "B" which equates to a minimum of 80%.	standard scientific format of an oral presentation based on a written paper. (07/20/2018) Reporting Period: 2016 - 2017 Conclusion: Target Met Results from 2 students completing GEOL 6302 in 2016-2017 assessment cycle. The average score on the evaluation of the thesis, both written and oral presentation, was 88%. The average on the assessment tool met (exceeded) the target goal. The students showed competence in the area of communicating original research results through the standard scientific format of an oral presentation based on a written paper. (05/30/2017) Related Documents: SLO 4b.pdf Reporting Period: 2015 - 2016 Conclusion: Target Met Results from 3 students completing GEOL 6302 in 2015-2016 assessment cycle. The average score on the evaluation of the thesis, both written and oral presentation, was 92%.	on their thesis. The score is 4 percentage points lower than previous cycle possibly because two of the students that defended had left Sul Ross to be gainfully employed and had been away from academia for at least a semester. This may need to be watched in the future to see if working and writing a thesis are not compatible. The Geology program faculty did not meet but that should happen in the next cycle. (07/20/2018) Use of Results: The evaluation rubric for the written thesis and oral thesis defense was modified slightly but adequately demonstrates that students can communicate their original research (purpose, significance, data, interpretations and conclusions) to their thesis committee and fellow geology students. The rubric will be re-examined to see if any other aspects of scientific communication relating to original research can be teased out. The current target goal may be set too low but the Geology program faculty have yet to discuss a new target goal. (05/30/2017) Use of Results: Based on the results, the oral presentation based on a written paper evaluation rubric, created for the 2015-2016 evaluation cycle

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		The graduate students showed competence in the area of communicating original research results through the standard scientific format of an oral presentation based on a written paper. (08/09/2016)	appears to function adequately. However, feedback from the faculty using the evaluation rubric will be incorporated into the following cycle. Geology faculty may also discuss a new target goal; the current target goal may be set too low. (08/09/2016)
		Reporting Period: 2014 - 2015 Conclusion: Target Met Results from 1 student completing GEOL 6302: The graduate student successfully defended his/her thesis (communicated their results by adequately explaining their research in an oral presentation which was based on submission of an acceptable written thesis) as determined by the thesis committee (assuming a minimum passing score of 80%). There were NO students that were unsuccessful. Discussion of Results: The evaluation method was essentially on a pass/ fail basis. The student showed competence in scientific communication through an oral presentation based on a written paper. (03/30/2016)	Use of Results: Based on the results, a standardized rubric evaluating the defense, both oral presentation and written thesis, of the research results will be created so the passing score can be quantified so it corresponds to the new SLO and goal (Target for Success). Also, the target goal may be set too low and will be re-evaluated for the next assessment cycle. (03/30/2016)