CLAS Deans' comments on

BS in Geology, Non-Accredited Program Report

Reviewer: Michael Cornebise, Associate Dean

Last report submitted by department: Fall 2020 (Initial Assessment Plan).

Comments:
The BS in Geology 4-year assessment program draws from multiple data points to measure SLOs including embedded exam questions, course grades resulting from research papers and presentations in multiple classes, journal article critiques, and a pre- and post-test instrument in GEO 1300G (the program's introductory course). In the report, the department indicated that all goals are being addressed and students are exceeding target levels (though it must be noted that the N was low for many data points). Results were shared with the Geology faculty who reviewed the data and proposed no changes to the assessment plan. My main critique of the current assessment plan is that it relies too heavily on student course grades to measure the majority of the defined SLOs, though the pre- and post-tests in GEO 1300G serve as a good source of standardized data. The assessment plan submitted in 2020 indicated that exit and alumni survey questions would be utilized, but these instruments are not mentioned in this report. I would urge the Geology faculty to consider other standardized means for measuring assessment in the future.

Academic Affairs –Review & Feedback
B.S. Geology
The B.S. in Geology program has several loci for obtaining data about its student learning outcomes. With a very low number of assignments assessed (in most cases, just one per outcome), however, the challenge is reliably measuring improvement in student learning across the program itself. So while the tiered approach is commendable (2000-, 3000-, and 4000-level courses), a more streamlined set of data sources (fewer select classes) may help secure a larger number of datapoints. The program will also want to develop and regularly administer an exit survey.
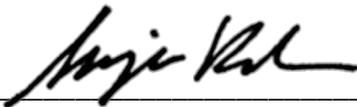
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VPAA Office   Dr. Suzie Park   Date

Student Learning Outcomes (SLOs) for Academic Programs
Please list all of the student learning outcomes for your program as articulated in the assessment plan:

1. Equity, Diversity, Inclusion, Global Citizenship. (EIU Undergrad Goals RC-1-4)
   Students in the Geology Program will **develop** an understanding and appreciation for the diversity of peoples and ideas contributing to the field of Geology. In addition, students will **investigate and evaluate** issues of environmental justice and its impacts on different groups.

2. Scientific Inquiry/Critical Thinking (EIU Undergrad Goals CT-1-5, QR 1-6)
   Students in the Geology Program will **engage** in scientific inquiry (science process skills) and critical thinking skills in order to question, examine, evaluate and respond to problems or arguments. This includes asking questions, formulating strategies, gathering data/info1mation synthesizing information, analyzing and interpreting data/information, and making conclusions based on these actions.

3. Discourse and Communication (EIU Undergrad Goals WCR 1-7, SLl-4)
   Students will be able to clearly **express and communicate** geological concepts and **present information** in written, oral, and/or graphic format. Students will **incorporate vocabulary** used within the geological discipline. They will **discourse** accurately about geological topics.

4. Discipline Specific Knowledge:
   a. Students will **demonstrate and apply** knowledge and awareness about how Earth materials and resources, including, but not limited to minerals, rocks, and soil, form and the processes involved and how to identify and classify those materials.

   b. Students will **demonstrate and apply** knowledge of the Theory of Plate Tectonics. This would include being able to explain the development of the theory, explain the theory, and being able to apply the theory of plate tectonics to interpreting natural disasters earth processes and the rock record.

   c. Students will **demonstrate and apply** knowledge of internal processes, such as geodynamics, Earth's interior, and earthquakes and the methods used to study these things.

   d. Students will **demonstrate, apply and interpret** knowledge of major physical and historical events of the Earth and the methods used to study these events.

e. Students will **demonstrate and apply** knowledge of the interactions between and major processes occurring within the major spheres (biosphere, hydrosphere, atmosphere, geosphere, and cryosphere), including but not limited to recycling of materials and major cycles, like the hydrological cycle, the carbon cycle etc.

f. Students will **demonstrate and apply** knowledge of surface geological processes and their impact on development of landforms, weathering, cycles, etc. and the ability to identify and interpret landform development

Overview of Measures/Instruments

SLO(s) 'Note: Measures might be used "ormore than 1 SLO	ULG*	Measures/Instruments Please include a clear description of the instrument including when and where it isadministered	How is the information Used? (include target score(s), results, and report **if** target(s)were met/not met/partially met for each instrument)
1	R,C	GEO 2200 History of Earth- research paper. GEO 3560 Principles of Stratigraphy - basin research paper and presentation; investigation of evolution of a depositional basin from inception o today, including resources tobtained from it and impact on society. GEO 4850 Environmental Geology - papers/presentations; investigation of natural phenomena, geological constructs/proc,esses involved and impact on society.	GEO 2200: target goal was demonstration of a good grasp of concepts/skills (70% or better) as ell as demonstration of written/oral communication skills. Two submissions were evaluated, both of which received 85% or better. GEO 3560: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills - only one datapoint; student received 95%. GEO 4850: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills - students' submissions averaged> 90% with all achieving above 70%.
2	C,Q, W,S	GEO 2200 History of Earth - research papers. GEO 3510 Principles of Sedimentation - journal article critiques; critically read and evaluate the scientific	GEO 2200: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills. Two submissions were evaluated, both of which received 85% or better.

		interpretations in published rresearch material. GEO 3560 Principles of Stratigraphy - basin research paper and presentation; investigation of evolution of a depositional basin from inception o today, including resources obtained from it and impact on society.	GEO 3510: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills - only one datapoint; student received 90%. GEO 3560: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills - only one datapoint; student received 95%.
3	W,C, R,S	GEO 2200 History of Earth - research papers and embedded questions in final exam. GEO 3420 Geomorphology - embedded question in final exam. GEO 3510 Principles of Sedimentation - journal article critiques; critically read and evaluate the scientific interpretations in published research material. GEO 3560 Principles of Stratigraphy - basin research paper and presentation; investigation of evolution of a depositional basin from inception o today, including resources obtained from it and impact on society. GEO 4850 Environmental Geology - papers/presentations; investigation of natural phenomena, geological constructs/processes involved and impact on society.	GEO 2200: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills. Two submissions were evaluated, both of which received 85% or better. GEO 3420: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills. Nine students completed the exam, with 3 obtaining 90% (Superior) and S achieving 70-89%. Only one student performed at a less than Satisfactory level. GEO 3510: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills - only one datapoint; student received 90%. GEO 3560: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills - only one datapoint; student received 95%. GEO 4850: target goal was demonstration of a good grasp of concepts/skills (70% or better) as well as demonstration of written/oral communication skills; students' submissions averaged> 90% with all achieving above 70%.

4 a, b, c, d, e, f	C,W, Q, S	GEO 1300G Introduction to Earth Science - Pre- and Post-test questions on discipline specific material. • Sub-goal a: Q's# 1 - 7 • Sub-goal b: Q's# 8 • Sub-goal c: Q's# 9 - 12 • Sub-goal d: Q's# 13 • Sub-goal e: Q's# 14 • Sub-goalf: Q's#15-24 GEO 2200 History of Earth - research papers and embedded questions in final exam. GEO 3420 Geomorphology - embedded question in final exam. GEO 3510 Principles of Sedimentation - journal article critiques; critically read and evaluate the scientific interpretations in published research material. GEO 3560 Principles of Stratigraphy - basin research paper and presentation; investigation of evolution of a depositional basin from inception to today, including resources obtained from it and impact on society. GEO 4850 Environmental Geology - papers/presentations and "Sediments and the Global Carbon Cycle" assignment; investigation of natural phenomena, geological constructs/processes involved and impact on society.	GEO 1300G: One hundred and one students took the Pre- and Post-tests; target goal was a demonstration of improvement of 1Understanding of key concepts (increase in number of correct answers from Pre-test). In *all* categories, this was achieved. Breakdown of averages of student response per SLO: • Sub-goal a: increased 26% • Sub-goal b: increased 28% • Sub-goal c: increased 34% • Sub-goal d: increased 9% • Sub-goal e: increased 1% • Sub-goal f: increased 36% GEO 2200: embedded questions in final exam addressed sub-goals 4b, c and d. Target goal was demonstration of a good grasp of concepts/skills (70% or better). Five students completed the exam, with all achieving 80% or better on each of these questions. Papers addressed sub-goals 4d, e and f. Target goal rwas demonstration of a good grasp of concepts/skills (70% or better). Two submissions were evaluated, both of which received 85% or better. GEO 3420: embedded question in final exam addressed sub-goals 4a, d, e and f. Target goal was demonstration of a good grasp of concepts/skills (70% or better). Nine students completed the exam, with 3 obtaining 90% (Superior) and 5 achieving 70-89%. Only one student performed at a less than Satisfactory level. GEO 3510: target goal was demonstration of a good grasp of concepts/skills (70% or better) including sub-goals 4a, c and d, as well as demonstration of written/oral communication skills - only one datapoint; student received 90%. GEO 3560: only one datapoint; target goal was demonstration of a good grasp of concepts/skills (70% or better) for sub-goals 4a, b, c and d as well as demonstration of

			written/oral communication skills - student received 95%. GEO 4850: target goal was demonstration of a good grasp of concepts/skills (70% or better); assignments covered all of the sub-goals. There were four submissions, each obtaining 1>90%.

Please reference any University Learning Goal(s) (ULG) that this SLO, **if any, may address or assess. C=Critical Thinking, W=Writing & Critical Reading; S=Speaking and Listening; Q=Quantitative reasoning; R=Responsible Citizenship; NA=Not Applicable*

Improvements and Changes Based on Assessment
Provide a short summary (1-2 paragraphs or bullets) of any curricular actions (revisions, additions, and so on) that were approved over the past two years as a result of reflecting on the student learning outcomes data. Are there any additional future changes, revisions, or interventions proposed or still pending?

- This is the first year of this evaluation instrument, so there are no data for the first part.
- There are no curricular changes planned at this time.

Please provide a brief description or bulleted list of any improvements (or declines) observed/measured in student learning. Be sure to mention any intervention made that has not yet resulted in student improvement (if applicable).

- Classes from which data is obtained spans the curriculum, from the introductory course that is required before taking any of the other classes in the sequence through to several in the upper-level majors' courses.
- There are two instructors for the GEO 1300G Introduction to Earth Sciences. Data are combined for evaluation on this report, although data from each section was initially kept separate to look for anomalies between the two. No statistical difference was noted- instructors are cohesive in content, message and delivery - so results were combined for efficiency in reporting.
- Data was obtained for all SLO's, although some are more readily measured than others. Future evaluations of this instrument should address how to measure all in a more robust fashion.
- Data from the pre- and post-tests indicate a lower percentage increase in understanding of SLO 4d and 4e. This could be attributed to students already having the necessary background in that topic, the need for additional questions in that section or revision of the questions for clarity.
- Overall, assessment indicates all goals are being addressed and students are exceeding target levels ~100% of the time.

Using the form below, please document annual faculty and committee engagement with the assessment process (such as the review of outcomes data, revisions/updates to assessment plan, and reaffirmation of SLOs).

History of Annual Review		
Date of Annual Review	Individuals/Groups who Reviewed Plan	Results of the Review (i.e., reference proposed changes from #1 above, revised SLOs, etc...)
October, 2022	Diane Burns, Katherine Lewandowski, Jake Crandall	None at this time.

Dean Review & Feedback

November 22, 2022

Dean or designee   Date

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