STUDENT LEARNING ASSESSMENT PROGRAM – Geology, B.S.

Overview

The core of the Geology program assessment centers on primarily embedded assessment tools delivered in various tiers of classes: general education classes, major core courses and major electives. The program assessment included general educations courses as well, although Geology students typically comprise a much smaller component of these classes. There is value, however, in determining the effectiveness of the education in these courses as part of the whole program.

There are eleven learning goals that have been identified as central to the Geology program. These are:

1.0 – Geology graduates will develop skills to carry out scientific inquiry within the earth sciences.

2.1 – Geology graduates will have a thorough knowledge and understanding of major physical and historical events of the Earth and the methods used to interpret these events.

2.2 – Geology graduates will have a thorough knowledge and understanding of common mineral, rock and soil physical processes as well as the identification/classification and genesis of common mineral, rocks and soils.

2.3 – Geology graduates will have a thorough knowledge and understanding of surface geologic processes and their impact on development of landforms, and the ability to identify and interpret landform development.

2.4 – Geology graduates will have a thorough knowledge and understanding of basic tectonic processes and the ability to interpret structural relations from geologic data.

2.5 – Geology graduates will have a thorough knowledge and understanding of processes occurring at different types of lithospheric plate boundaries.

2.6 – Geology graduates will have a thorough knowledge and understanding of interactions between and major processes occurring within the major spheres (biosphere, hydrosphere, atmosphere, and geosphere) and cycles (e.g. geochemical) of Earth.

3.1 – Geology graduates should have critical thinking skills- the ability to formulate strategies, collect and synthesize data, and apply mathematical and graphical techniques to arrive at solutions, and interpret results related to geological processes.

3.2 – Geology graduates should be able to develop and use models, visualizations, and three-dimensional conceptualizations.

3.3 – Geology graduates should have good communication Skills- the ability to clearly express earth science concepts and present results from analysis, laboratory and field work in written, oral, and graphic format.

3.4 – Geology graduates should demonstrate/understand Global Citizenship – the ability to function as responsible global citizens by making objective decisions informed by multiple perspectives.

Implementation

1) There are two general education courses in the Geology program – GEO 1300G Introduction to Earth Science and GEO 2450G Oceanography. Instructors in these two courses will administer a pre-test of multiple choice questions written on topics that address a the majority of the above-referenced learning goals. Ones such as "Communications Skills" are not accurately evaluated by this method and are not evaluated in this situation. The students are administered the pre-test in the first week of the semester, before any instruction, so that a baseline of pre-existing knowledge can be established. Throughout the remainder of the semester, the questions that appeared on the pre-test are inserted into exams after the corresponding topics have been discussed. Data from the answers on the pre-test as well as the subsequent in-term tests are compiled and sent to the Chair of the Geology Assessment Committee.
2) A specialized set of assessment questions will be added to Purdue evaluations for all Geology program core courses. These questions will include ones for which the students determine a score on a spectrum scale as well as open-ended questions so that the students can elaborate on their ratings as well as provide critical feedback on the course in general. These will – ideally – be administered in face-to-face class sessions to improve return rates on the questions. Data from these questions will be sent to the Chair of the Geology Assessment Committee.
3) Each of the Geology program core courses will have a specific exercise/assignment associated with it that addresses one or more of the Goals. A clean copy of these assignments will be saved for each student from each class in a central department archive (eg Sharepoint). Every summer, the department Office Manager will compile a listing of which students graduated in the three prior semesters (Summer, Fall and Spring). Using this list, the Office Manager will review the archive and retrieve all submissions for each graduated student. These will be assembled into portfolios that will be provided to the Geology faculty members. Each faculty will then review the portfolios and rank the submissions by a scaled spectrum as to how well Goals have been achieved. This data will be sent to the Chair of the Geology Assessment Committee.
4) Graduating seniors will be asked to fill out an exit survey to determine their evaluation of having achieved the specific learning goals based on a spectrum ranging from "Extremely Well" to "Not at All." There are open-ended questions as well, so that the students can elaborate on their ratings as well as provide critical feedback on the program in general. In order to promote the best response rate, these surveys will be included in a letter from the Chair congratulating the students on having graduated and asking them to reflect on their evaluation of the program.

5) Alumni surveys will be sent to graduates 5 and 10 years out of the program. These will be delivered via postal and email addresses as well as posted in the Annual Department Newsletter and in the EIU Geology and Geography Department Facebook group to ensure best response rates. These surveys are constructed exactly like the Graduating Senior Survey to allow for better comparison among the years.

Annual Assessment

The Chair of the Geology Assessment Committee will compile all of the data received into a single report, providing preliminary comparison analyses. This report will be disseminated by August 1st of each year to all Geology faculty members (Unit A as well as Unit B) for review. At/On September 15th of each year, the Geology faculty members will meet to discuss the results, suggestions for improvements, extenuating circumstances and the like in their evaluation of the data/analyses. This meeting will culminate in suggestions for any necessary refinements to the program and/or learning outcomes, which will then be implemented starting in the following Fall semester. The Chair of the Geology Assessment Committee will create/submit the appropriate Assessment Report to the Dean (Year 2) or to the Dean and VPAA (Year 4) as necessary.

Regarding expectations in coursework evaluation, most assessments align with a standard grade percentage scale to determine how well the students meet the learning objectives. A score of 90% or higher indicates a Superior grasp of the information, 75% to 89% indicates a Significant grasp, 60%-74% indicates a Satisfactory grasp, a score of 45%-59% represents a Nominal grasp of material, while those scoring below 45% are considered to demonstrate No Discernible Grasp of the material.

CLAS Deans' comments on Geology B.S. report

Reviewer: Michael Cornebise

Please note: **This is a STARTING POINT for conversation, with no rubric per se. We will be developing a rubric collaboratively (amongst chairs, Associate Deans, and our new EIU Assessment Coordinator, Yvette Smith) in the spring of 2021 based on peer/aspirant institution models, then we'll evaluate it by that. Meanwhile, if you'd like to modify your document based on these comments, feel free. We appreciate your patience with this process as it evolves!**

1. SLOs are generally clear and measurable, though the program might consider rephrasing some of them to reflect the learning hierarchy in Bloom's Taxonomy.
2. The assessment plan includes a nice mix of measurements to gather data at different levels: exit survey and alumni survey questions, pre-tests, student assessment portfolios and specialized assessment questions in core Geology courses.
3. The targets are clearly identified in the plan, and the data will be shared and evaluated by the Geology Assessment Committee.

At this point, the plan for the Geology B.S. seems comprehensive, but should be presented using the Overview of Measures/Instruments chart in the non-accredited assessment template. Please revise and include the SLOs and undergraduate learning goals in columns one and two, the measures/instruments to be utilized in the third column, and specify the desired targets in the fourth column. Since this is an initial report, there is no need to include information on "improvements and changes based on assessment" described in the template since that information will be supplied after data are generated.