Academic Program Assessment Plan Earth Science BS

May 2016

Earth Science leading to the Bachelor of Science degree. Prospective secondary teachers may plan a program, in cooperation with the College of Education, which will satisfy the teacher licensure requirements. Students interested in environmental problems, teaching earth science in public schools, or wishing to pursue graduate work in either geography or geology will obtain much of the necessary foundation through this degree. Because the program outlined below lists only minimum science requirements, it is expected that most students will use some of their elective credit hours to strengthen their mathematics and science backgrounds in areas other than geography and geology.

Program Goals

Provide a broad spectrum of Earth Science knowledge for students pursuing careers in teaching or those interested in environmental programs. Individual programs beyond the base requirements are determined by the student in conjunction with their advisor.

Student Learning Outcomes

Students earning the BS in Geology will:

- Have an appreciation for the environmental aspects of earth systems and potential impacts and hazards associated with human occupation.
- Understand the mineralogy and petrology of the earth.
- Understand meteorology and climatology of earth
- Be able to articulate processes of climate change and global change
- Understand need for and mechanisms of resource sustainability
- Understand the concepts of geologic time, the succession of life on earth through geologic time, and the tectonic forces acting on earth through geologic time.
- Have sufficient mathematics, physics and/or chemistry skills to be able to apply concepts to Earth Science problems
- Have the ability to communicate results of their efforts in written reports and orally to diverse audiences.

Assessment of Student Learning

Assessment Methods of Assessing Student Learning

Direct Methods

- Score gains from pre and post tests are used as a primary assessment mechanism for students in GEOS 1113 – introductory geology and for GEOS 1133 – earth science.

Indirect Methods

- Course grades – standard routine method used in each course in our program.
- Admission rates into graduate programs and quality of the graduate program accepting our students.
- Placement rates of graduates into appropriate career positions and starting salaries.

- Student/alumni satisfaction with learning, collected through surveys, exit interviews, or focus groups – track our students to the extent possible. We also have an external advisory board that provides feedback annually on our curriculum and the quality of the students graduating from our program.
- Student participation rates in faculty research, publications and conference presentations.
- Honors, awards, and scholarships earned by students and alumni.

Timelines for Data Collection and Analysis

Assessment data for our introductory courses are collected each academic semester. These data are compiled annually and reviewed by a faculty committee.

Our external advisory committee, which is composed of representatives from industry and local, state and federal government representatives, meets annually and provides feedback on our curriculum relative to their needs, as well as the quality of the students graduating from our program.

Use of Results

Results of data analysis are reviewed and discussed by faculty annually. Modifications to curriculum do occur as a result of these analyses, and as a result of feedback provided by our external partners. Multiple faculty within Geosciences are primary advisors in the Earth Sciences degree program (Davis, Dixon, Stahle, Feng, Hehr). These faculty meet at least once per semester to discuss the curriculum for the degree program and modifications that might be needed as a result of program assessment.

The most recent changes resulting from these reviews was the name change of GEOS 1133 from Environmental Geology to Earth Science to better reflect the discussion of all earth systems that is included in this course, and the name change of GEOS 3003 from Conservation of Natural Resources to Sustaining Earth to better reflect the thrust and content of this course relative to the Earth Science degree program.

These examples indicate that ongoing assessment, analysis and review combined with implementation of course and program modifications are critical to maintaining a healthy viable program to meet our student learning goals/objectives and outcomes.

Annual Academic Assessment Report

BS Earth Science

(May 2016)

Report annually to the Dean of the college/school the following:

- **Results of analysis of assessment of Student Learning Outcome**
  - Assessment and analysis of pre- and post-test results will be reported in a separate report related to Geosciences Core Course Assessments. In general, results remain similar to previous years. In GEOS 1113 students typically score around 40% to 50% on the pre-test and improve to about 65% or 75% on the post-test. In GEOS 1133 students typically score about 65% to 70% on the pre-test and improve to around 80% - 85% on the post-test. This occurs because many of the students in GEOS 1133 have already taken GEOS 1113 and therefore the group tends to be high-graded from the previous course. Better, more engaged, students with significant additional background participating in GEOS 1133.
  - Graduate placement is tracked to the extent possible, and reported annually to our external advisory board. These data are tabulated in written reports to the advisory board since 2007.
  - Our external advisory board met and provided feedback on our programs in October 2015 and May 2016.
- **Any changes to degree/certificate planned or made on the basis of the assessment and analysis**
  - None planned based on the 2015-2016 assessment period
- **Any changes to the assessment process made or planned.**
  - None planned based on the 2015-2016 assessment period