

**ASSESSMENT REPORT FOR Group 4: Cycle 1 - Fall 2017 - Fall 2018**

**Mission Statement**

Geological sciences encompass the entire spectrum of the study of the planet Earth – the materials of which it is made, the physical forces that act on the solid Earth and the oceans, the history of planet and its life forms since its origin, and its current and future environment. The mission of the Geosciences section in the School of the Earth, Ocean and Environment of the University of South Carolina is to develop, communicate, apply and promote geological sciences through its teaching, research, and service to the university, state and nation. The overarching goal of undergraduate programs in Geoscience is to develop and communicate geological sciences through teaching and various forms of service. The program strives to provide the highest quality instruction in all of its undergraduate majors programs. We place a strong emphasis on integrating research and teaching in order to provide geology students with practical experience that will better prepare them for either graduate school or entry-level careers in the geological sciences.

**Goal 1.**

The Geoscience section of the School of the Earth, Ocean and Environment expects all Geological Science graduates to have knowledge of fundamental concepts and laboratory skills in the geosciences.

**Curriculum**

Students are taught fundamental concepts and laboratory skills in the geosciences primarily in the following courses; GEOL101 or 103 or 201 (Introductory Geology), GEOL302 (Rocks & Minerals), GEOL305 (Earth Systems Through Time), GEOL315 (Surface & Near-Surface Processes), GEOL325 (Stratigraphy & Sedimentary Basins), GEOL335 (Processes of Global Environmental Change), GEOL345 (Igneous and Metamorphic Processes) and GEOL355 (Structural Geology and Tectonics).

**Learning Outcome 1.**

Students will demonstrate their knowledge of fundamental concepts and laboratory skills in the geosciences by responding to written and laboratory-practical exam questions in at least one of the following courses: GEOL 302, 305, 315, 325, 335, 345 and 355.

**Measures and Criteria**

50% of geology students will demonstrate a level of knowledge of at least the excellence level on their *Questions on Fundamental Concepts and Laboratory Skills* assessment tests.

**Methods**

*Questions on Fundamental Concepts and Laboratory Skills* tests will be given in at least one of the specified GEOL courses. These tests will be graded on an objective basis using standardized scoring rubrics. Questions will be identified by the course instructors in consultation with the Undergraduate Director. The questions will be included in a lecture or laboratory examination for the appropriate course . These standardized questions will be included in an exam each time the specified course(s) is taught. Results of this testing will be kept on file in the office of the secretary to the Undergraduate Director.

**Results**

The assessment question was given in the laboratory section of one of the required Geological Sciences courses, GEOL 345, Igneous and Metamorphic Processes, and the results are based on the course taught in Spring 2018. During the Fall 2017-Fall 2018 period, GEOL 345 was offered once in Spring 2018.

The questions which represented an assessment of the fundamental knowledge of the internal structure of the earth and the rocks and minerals in the earth's structure, was given to a class of 23 students.

<b>GEOL 345 lab: Fundamental concepts and Laboratory skills test</b>	Mastery	Excellence	Proficient	Competent	Not Proficient
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# of students	3	7	4	8	1
% of students	13.0	30.4	17.4	34.8	4.3

The results indicate that 43.4% of our students were at the Excellence or Mastery proficiency level, which is lower than our goal of 50% at the excellence or better proficiency. It is encouraging that 61% of our students are at the Proficient level or above, even it not meeting our stated goal.

### **Use of Results**

The results indicate that the Geological Sciences students did not master the fundamental concepts and laboratory skill at the level the faculty anticipate in Spring 2018. These results (43.4%) are significantly lower than results in prior years (values from 2016 indicated 75% of the students at the excellence level or above). Given the major disparity between the two years of results for similar test questions, it is difficult to discern if it was a true lack of mastery of the concepts or another factor. The GEOL 345 course has always been taught as a Spring course, but the curriculum changed in 2019 to move it to a fall class, and taken at the same time as other GEOL required major courses, such as GEOL 325 (Stratigraphy and Sedimentary Basins) and GEOL 355 (Structural Geology and Tectonics). If the level of student performance does not increase this coming year, the undergraduate committee and faculty will review whether additional actions are necessary.

### **Goal 2.**

All graduates with a BS in Geological Sciences are expected to possess basic field skills in the geosciences.

#### **Curriculum**

Students are taught basic field skills primarily in GEOL500 (Field Geology). This is a six-week 'capstone' course that is taught every year in Cañon City, Colorado. Students are prepared for this course in the other GEOL courses required for the BS degree in geology such as GEOL101 or 103 or 201, 302, 305, 315, 325, 335, 345, 355.

#### **Learning Outcome 1.**

Students will demonstrate knowledge of geological field skills by demonstrating a competency at the proficiency level on a geologic mapping exercise, preferably the Sheep Mountain project, in GEOL500.

#### **Measures and Criteria**

100% of all Geological Science students who take GEOL500 will demonstrate proficiency in the completion of the Sheep Mountain project (preferably, but other projects may be substituted) and 50% of all students who complete the Sheep Mountain project in GEOL500 will demonstrate an excellent level of knowledge.

#### **Methods**

Students will demonstrate their mastery of basic field skills through their completion of the Sheep Mountain project in GEOL500 (or the required Field Geology Course (GEOL 498 in summer 2018)). A proficiency level of knowledge will demonstrate a minimal knowledge of basic field skills. An excellent level of knowledge will demonstrate an acceptable or appropriate knowledge of basic field skills. Note: The above levels of knowledge of fundamental concepts will be compared annually on the specific Sheep Mountain project which has been uniformly included as part of the Field Camp experience as described below: GEOL500 (Field Geology) is the main capstone experience for students earning a Geological Science degree. This course, which is offered in cooperation with the Department of Geology at the University of Georgia, operates for four weeks in May and June, in Cañon City, Colorado. Most of the work done by USC students in this course is evaluated and graded by non-USC faculty. Consequently, GEOL500 presents an ideal opportunity to obtain an independent evaluation of student learning under our curriculum (GEOL302, 305, 315, 325, 335, 345, 355) which prepares students for GEOL500. (Note: While the Sheep Mountain exercise is anticipated to be available annually, field conditions may require (on occasion) that another exercise be substituted.)

#### **Results**

Twelve USC students were enrolled in GEOL 498 (GEOL 500's proxy for the year) in Summer 2018. All twelve students achieved at least the Proficiency level of knowledge in the 2018 iteration of the Sheep Mountain mapping exercise per the Methods of assessment.

Of those twelve, three students achieved the Excellent level of knowledge; and none achieved the Mastery

level of knowledge.

**Use of Results**

We will use these and previous years' data for comparative purposes as we transition to a new field camp model starting in Summer 2019, which will include new map projects.