General Education Annual Course Assessment Form

Course Number/Title  GEOL 112  Hazards, Risks Earthquakes and Volcanoes    GE Area R  Earth & Environ

Results reported for AY 2014-2015 # of sections 3 # of instructors 2

Course Coordinator: __Donald Reed_________________ E-mail: __dreed@sjsu.edu_________________

Department Chair: __Jonathan Miller______________ College: _____Science____________________

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted to <curriculum@sjsu.edu>, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by October 1 of the following academic year.

Part 1

To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO #3 – students are able to apply a scientific approach to answer questions about the earth and environment

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

Two instructors, Reed and Shostak, provided assessment data and will be described separately.

Reed (1 section) – Students actively participate in a 90 minute-long walk along the trace of the Hayward Fault in Fremont, CA to make observations and collect measurements of ground deformation due to recent fault slip, both seismic and aseismic. Students, who cannot attend the walk, may substitute a virtual tour of the Hayward Fault, using Google Earth, and developed on the U.S. Geological Survey (http://earthquake.usgs.gov/regional/nca/haywardfault/). Students in the later group are required to make many of the same observations and collect measurements from photographs at 24 stops along the Hayward Fault between Richmond and Fremont. These data are then combined with GPS measurements of ground displacement and patterns of recent and historical earthquakes, both available from online databases at UNAVCO and the U.S. Geological Survey, to study the processes of seismic slip and aseismic creep, which are then placed in the context of earthquake probability forecasting. This research is written up in a scientific report on recent activity along the Hayward Fault and implications for seismic hazard analysis. The format of the report closely follows that of peer-reviewed scientific research journals in the geosciences.

36 of the 37 students, or 97.3% of the class, achieved this learning outcome by earning a “C” of higher grade on this assignment. The median score was 89%.

Shostak (2 sections) - The assignment required students to work in groups of 2 to 4 to determine whether their assigned GPS station in California was, in fact, moving, and if so, how fast and in what direction. The assignment required students to work with real, high-resolution (daily) time-
series GPS data from the Plate Boundary Observatory (data compiled by UNAVCO) and arrive at independent conclusions about the movement of their GPS stations. Students with stations that had experienced “setbacks” in movement (from earthquakes) had to explain their anomalous data. Class results were compiled into a map that demonstrated active tectonic plate movement in California.

Of 38 students enrolled in each section of the course, 36 students completed the assignment successfully. Grades ranged from 0 (not submitted) to 100% (correct calculations and well-reasoned conclusions). The median grade was 85-86%.

(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

Reed (1 section) - No modifications are needed at this time as the assignment has shown to be highly successful with students making their own scientific observations and measurements, integrating these data with available online data used by practicing scientists in the discipline, and then writing up the results in a scientific report. Moreover, this report is then used as the starting point for a subsequent seismic hazard analysis of their home.

Shostak (2 sections) - For the fall semester, Shostak will be using groups of 2 students to improve an individual sense of responsibility of each student to the group as a whole. To reinforce the idea of applying a scientific approach to the question of plate movement, she is also planning to follow up the homework assignment with an essay question on the midterm exam following the assignment.

Part 2

To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

Yes. No actions are planned.

(5) If this course is in a GE Area with a stated enrollment limit (Areas A1, A2, A3, C2, D1, R, S, V, & Z), please indicate how oral presentations will be evaluated with larger sections (Area A1), or how practice and revisions in writing will be addressed with larger sections, particularly how students are receiving thorough feedback on the writing which accounts for the minimum word count in this GE category (Areas A2, A3, C2, D1, R, S, V, & Z) and, for the writing intensive courses (A2, A3, and Z), documentation that the students are meeting the GE SLOs for writing.

All sections taught are below the enrollment limit for Area R courses and students receive ample feedback on writing from multiple writing assignments. On each assignment, instructors provide detailed editorial and grammatical corrections, as well as general comments related to a grading rubric provided to each student.