

Course Outcomes Guide

Directions: Please complete this form to document your progress toward improving student learning. For each item, indicate your progress and your anticipated next steps. Thank you!

Course/Program Title: PHS 107/108 **Date:** May 2014
Introductory Physical Geology

Course/Program Team: Nancy Thorpe, Veronica Stein, and Adjuncts

Expected Learning Outcomes

- Demonstrate knowledge of the scientific method by investigating and solving real-world geologic problems.
- Discover the role of the various spheres of our earth's system and learn how the interactions between these components and the composition of the earth affect the world around us.
- Use technology to learn about geological processes and monitor real-time events such as volcanoes, earthquakes, and floods.
- Apply course content to environmental and human health related issues (e.g. earthquakes, volcanoes, and air and water pollution.)
- Access, process, analyze, and synthesize scientific information.

Assessment (How do or will students demonstrate achievement of each outcome? Please attach a copy of your assessment electronically.)

1. In-class exams with combination of multiple-choice, short answer, and essay.
2. Written laboratory worksheets with a grading rubric.
3. Written laboratory mid-term and final exams.
4. Research papers on environmental and human health issues.
5. Geologic hazard problem solving using Hazard City software.
6. Common 100 multiple choice question final exam developed by the team.

Validation (What methods have you used or will you use to validate your assessment?)

We have developed a common final exam that consists of 100 multiple choice questions and also a general education assessment consisting of 10 multiple choice questions. They were both first implemented in Fall 2012.

Results (What do your assessment data show? If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?)

Please see Data Table 1 for results of the common final exam. Data Table 2 provides more detailed information regarding students taking this course. Areas of weakness noted by general education assessment are interpreting graphs and problem solving. Areas of weakness noted from the common final include being able to apply scientific knowledge to real world situations (Learning Outcome 1).

Spring '14 semester of PHS108 implemented for the first time an online lecture format and an online laboratory format.

Follow-up (How have you used or how will you use the data to improve student learning?)

Individual instructors will receive the analysis of exam results to see areas of weakness and determine best way to emphasize those areas. One suggestion is to look at more current events and make connections to what they are learning. Instructors will also include more graphing assignments into the coursework. Continued use of and more emphasis will be placed on the geologic hazard problem solving assignments.

One section of the course was taught online in spring 2013 and the exam results from the two sections seem fairly comparable. The online homework systems and the online Hazard City Program seem to be effective for introducing technology into the course as well as, emphasizing the content of the course.

We will continue to evaluate the online course and laboratory component over the next year.

Since these courses, 107 and 108, are taught by adjuncts, it is sometimes difficult to collect necessary data. We will work on developing a computerized database for easier collection.

Budget Justification (What resources are necessary to improve student learning?)

We will need resources to purchase any standardized exams we decided to use.

Science Gen Ed Course __ PHS107/108 – Introductory Physical Geology

General Education Outcomes for Science	Explain how your course achieves each outcome
Relate a basic core of scientific principles to an open-ended framework	** Course SLO's – 1, 2, 4 Hazard City assignments Quiz and test questions Essay questions on exams Dimension Stone Activity
Demonstrate observational and analytical skills in a structured situation	SLO's – 1, 2, 3 Hazard City assignments Plate Tectonic Assignment Mineral and Rock identification activities Quiz and test essay questions Various worksheets completed in class Laboratory work
Formulate conclusions based on observations and information	SLO's – 1, 3, 4 Hazard City assignments Geology and Human Health written paper assignment Essay questions on exams Laboratory reports Standardized Physical Geology final exam
Use technology to access scientific information, generate and analyze empirical data, and solve problems	SLO's – 1, 3, 4 Hazard City assignments Google Earth assignments Use of Blackboard for course Use of various website for real-time data on earthquake, volcanoes, and floods On-line mineral and rock identification keys Various laboratories – GIS lab

**** STUDENT LEARNING OUTCOMES:**

At the completion of this course, students should be able to:

1. Demonstrate knowledge of the scientific method by investigating and solving real-world geologic problems.
2. Discover the role of the various spheres of our earth's system and learn how the interactions between these components and the composition of the earth affect the world around us.
3. Use technology to learn about geological processes and monitor real-time events such as volcanoes, earthquakes, and floods.
4. Apply course content to environmental and human health related issues (e.g. earthquakes, volcanoes, and air and water pollution.)

Data Table 1							
Common Final Results							
Term	Instructor	# of stude	Median Sc	Mean Sco	Std Dev	High score	Low score
Fall 12	Burch	35		77.60			
	Spannos						
Spring 13	Burch	17	80.00	77.29	16.51	96.00	41.00
	Spannos						
Fall 13	Burch						
	Spannos						
Spring 14	Burch	19		77.00			
	Spannos	13		77.00			

General Education Assessment							
Term	Instructor	# of stude	Median Sc	Mean Sco	Std Dev	High score	Low score
Fall 12	Burch	33		8.21			
	Spannos						
Spring 13	Burch	17	8.60	8.59	1.09	10.00	6.00
	Spannos						
Fall 13	Burch						
	Spannos						
Spring 14	Burch	19		9.00			
	Spannos	13		9.10			

Data Table 2

Course: PHS107/108

SLOA Data

Faculty Team: N. Thorpe

	SU 2012	FA 2012	SP 2013	SU 2013	FA 2013	SP 2014
# Active students		35	31		40	32
%W		0	3.2			6.3
*% walk-away Fs No final exam/grade = F		4.3	9.7			15.6
% Success (A,B,C)		97.8	76.0			78.2
Mean Common Lab Practical Score						
Common Comprehensive Final Exam Score		77.6	89.8		79.5	77.0
Gen Ed Assessment		8.21/10	8.5/10			9.1/10
Mean course grade		83.8	76.12		74.5	78.0
Item Analysis Weakest Content Areas		**	**			

*% Walk-away Fs = Did not take the final exam and received a grade of F.

Content Areas

**Weak area: interpolation of graph to access data; math analysis of data. Same areas for each semester.