

**LAST REVIEW:** 2010-11  
*(i.e. 2006-2007)*

**NEXT REVIEW:** 2015-2016  
*(i.e. 2011-2012)*

**STATUS:** A  
*(A, I, D)*

**COURSE TITLE:** Physical Geology Lab

**COMMON COURSE NUMBER:** GLY1010L

**CREDIT HOURS:** 1

**CONTACT HOUR BREAKDOWN**

*(Per 16 week term)*

**CLOCK HOURS:**  
*(Voc. Course ONLY)*

Lecture: Lab: 32

Clinic: Other:

**PREREQUISITE(S):** None

**COREQUISITE(S):** None

**PRE/COREQUISITE(S):**

**COURSE DESCRIPTION** *(750 characters, maximum)*: This laboratory is the study of common rocks and minerals including their classification and origin. It will also cover the interpretation of landforms through the study of topographic and geologic maps. Special fee is charged.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area 4C  
General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area 4C  
General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area 4

## **UNIT TITLES**

- 1. Reading and Writing in the Geological Sciences**
- 2. Introduction to laboratory study**
- 3. Materials of the Earth's Crust**
- 4. Interpretation of Maps and Aerial Photography**
- 5. Grain size analysis**
- 6. Selected Additional Topics Included at Discretion of Instructor**

\*\*\* Complete the following only if course is seeking general education status \*\*\*

**GENERAL EDUCATION Competencies and Skills \*:**

In the box to the right of the Competency/Skill, enter all specific **student learning outcome** unit numbers, as indicated in the course outline (i.e. 1.1, 2.7, 4.2, 4.0 and 5.12) that apply.

<b>Course must include <u>all</u> of the following:</b>	
<b>1. Read with critical comprehension**</b>	1.1
<b>2. Write clearly and coherently**</b>	1.5, 2.3,2.5
<b>3. Demonstrate literacy as appropriate within a given discipline**</b> a) Information                      b) Technology c) Workplace                        d) Cultural e) Quantitative                      f) Scientific g) Environmental	b. 3.3 c. 1.2, 3.2 e. 1.2, 3.1, 3.2, 4.3 f. 1.0, 2.0, 3.0, 4.0, 5.0
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts**</b>	1.3, 1.4
<b>Course must include at least <u>one</u> of the following:</b>	
<b>5. Differentiate between ethical and unethical behavior</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.2
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

*\*General Education Competencies and Skills endorsed by 2010-2011 General Education Task Force*

**\*\*Required Competencies**

**1) Read with critical comprehension.**

The student will be introduced to the basic texts, concepts, vocabulary, and methods necessary for developing an understanding of the discipline and meeting the required benchmarks as stated in the course outline.

**2) Write clearly and coherently.**

The student will demonstrate an understanding and mastery of subject matter in a variety of ways, including writing. Writing activities may include both graded and ungraded essays, short answer quizzes, summaries, reactions, journals, and various other reports.

**3) Demonstrate and apply literacy across all the disciplines (indicate which ones apply).**

- a) **Information literacy** means understanding how to locate needed information, using the appropriate technology for the task, managing and evaluating the extracted information and using it effectively and ethically.
- b) **Technology literacy** is the ability to responsibly and effectively use appropriate technology to access, manage, integrate, or create information, and/or use technology to accomplish a given task.
- c) **Workplace literacy** is having the appropriate knowledge and skills to communicate and work with others effectively and perform job duties, whether it is through the use of computers and/or other technology.
- d) **Cultural literacy** is recognizing, understanding, and appreciating the similarities and differences between one's own culture and the cultures of others through a study of the arts, customs, beliefs, values, and history that define a culture.
- e) **Quantitative literacy** is having the ability to formulate, solve and interpret mathematical/statistical operations and graphical/tabular representations to make informed decisions.

- f) **Scientific literacy** means understanding the methodology and application of the scientific process, the physical and biological worlds, and recognizing that scientific knowledge is continuously updated or revised as new information is discovered.
- g) **Environmental literacy** is creating a context within which environmental issues can be viewed, imparting knowledge to enhance one's ability to analyze the issues, make the connections between humans' decisions and actions and the challenges facing the environment, and instilling the desire to sustain the environment through ethical practices in both one's professional and personal lives.

**4. Apply problem-solving skills or methods to make informed decisions in a variety of contexts.**

The student will use acquired skills or methods to recognize, analyze, adapt, and apply critical thinking to solve problems and make informed decisions.

**EVALUATION:**

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

1. Portfolio	
2. Short essays	
3. Research Papers	
4. Group projects	
5. Discussions (In class and online)	
6. <b>Multiple Choice tests</b>	3.1-3.3, 5.12, 5.4, 6.0
7. Presentations	
8. Service Learning Projects	
9. Quizzes (pop, announced, etc.)	
10. Take-home tests	
11. <b>Summaries, critiques, and analyses</b>	1.0-6.0
12. Reaction papers	
13. Surveys	
<b>14. Performance</b>	2.2-2.5, 3.1, 3.3, 4.1-4.5, 5.2-5.3, 6.0
<b>15. Short answer tests</b>	3.2, 4.3-4.5, 5.1, 5.4, 6.0
16. Classroom debates and colloquia	
17. Blogs, wikis, web pages	
<b>18. Other (Lab Reports)</b>	1.0-6.0

## **UNITS**

### **Unit 1: Reading and Writing in the Geological Sciences**

#### **General Outcome:**

- 1.0 The students shall be able to describe and execute the scientific method of investigation through observation, measurement and evaluation of collected data.**

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the students shall be able to:**

- 1.1 Demonstrate in writing the ability to analyze, evaluate, compare, and/or extract data relevant to geology from course related readings.
- 1.2 Evaluate the validity of information from a variety of sources, including electronic/print sources and data bases.
- 1.3 Illustrate using diagrams, drawings, outlines, concept maps, and/or other methods connections among geological concepts.
- 1.4 Demonstrate the ability to use the appropriate technology to carry out course requirements.

Common Course Number: GLY1010L

**Unit 2: Introduction to Laboratory Study**

**General Outcome:**

- 2.0 The students shall be able to describe and execute the scientific method of investigation through observation, measurement and evaluation of collected data.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the students shall be able to:**

- 2.1 Carefully read and follow written and oral instructions in order to practice laboratory safety and integrity.
- 2.2 Measure common objects using metric and English measurements of length, volume, and velocity.
- 2.3 Analyze data through the use of plots and graphs.
- 2.4 Hypothesize outcomes based on observation and data collection.
- 2.5 Create lab summaries that adhere to the scientific method.

**Common Course Number: GLY1010L**

**Unit 3: Materials of the Earth's Crust**

**General Outcome:**

**3.0 The students shall be able to classify and identify common minerals and rocks**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the students shall be able to:**

- 3.1 Classify and visually identify common minerals based on their physical properties
- 3.2 Evaluate the societal importance of common minerals; know how they are obtained, and social impacts of depletion of natural resources.
- 3.3 Classify, identify and sketch Igneous, Sedimentary, and Metamorphic rocks based on their origin, composition, and texture.

**Common Course Number: GLY1010L**

**Unit 4: Interpretation of Maps and Aerial Photography**

**General Outcome:**

- 4.0 The students shall be able to use visual imagery (maps, remote sensing, aerial photography) in order to interpret local geology.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the students shall be able to:**

- 4.1 Define and use fractional, graphic, and verbal scales on various types of maps in order to measure and judge distances.
- 4.2 Thoroughly understand the nature and utility of coordinate systems (latitude and longitude) in order to discuss location.
- 4.3 Evaluate character of landscapes based on elevations as presented by contour lines on topographic maps.
- 4.4 Interpret geologic structures of an area based on geologic maps and aerial and satellite imagery.
- 4.5 Use stereoscopic pairs to interpret elevation and local geology.

**Common Course Number: GLY1010L**

**Unit 5: Grain size analysis**

**General Outcome:**

- 5.0 The students shall recognize the importance of grain size distribution of sediments and sedimentary rocks and be able to take direct measurements in order to analyze them.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the students shall be able to:**

- 5.1 Discuss the Wentworth scale of sediment sizes.
- 5.2 Categorize sediment based on measurements of grain diameters.
- 5.3 Statistically analyze large (gravel-size) to very small (clay-size) sediment size distributions.
- 5.4 Evaluate the various environments that lead to deposition of sediments of varying sizes.

Common Course Number: GLY1010L

**Unit 6: Selected Additional Topics Included at Discretion of Instructor**

**General Outcome:**

- 6.0 The students shall be able to discuss various aspects of topics in geology (selected by the instructor) based on information presented from lecture, peer-reviewed journals, mass media, etc.**

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the students shall be able to:**

- 6.1 Oceanography
- 6.2 Structural Geology
- 6.3 Streams and Flooding
- 6.4 Geologic Time
- 5.5 Earthquakes
- 5.6 Volcanoes