

Bergen Community College
Division of Mathematics, Science and Technology
Department of Physical Sciences

Course Syllabus
PHY 113 - Geology

Semester and year:
Course Number:
Meeting Times and Locations:

Instructor:
Office Location:
Phone:
Office Hours:
Email Address:

COURSE TITLE: PHY 113 - Geology

COURSE DESCRIPTION: PHY-113 Geology is a study of the solid Earth. Topics include minerals and rocks, weathering and soils, glaciers, deserts, earthquakes and volcanism. Special attention will be given to the plate tectonics theory as the unifying theory of geology; the structure of the Earth's interior, the physiography of continental and oceanic crust, geologic time and Earth history. Laboratory work includes mineral and rock identification based on physical and chemical properties, identification of geologic features and processes which formed these features using topographic maps and use of principles of relative dating to extract sequence of geologic events from rock outcrops.

3 lectures, 3 labs, 4 credits
}General Education Course

TEXTBOOKS: *An Introduction to Geology*, C. Johnson, et al., <http://opengeology.org/textbook/>, 2017
Laboratory Manual in Physical Geology, V. Cronin (ed.), 11th custom edition, Pearson, 2017

STUDENT LEARNING OBJECTIVES

The student will be able to:

1. Present the technical terminology of geology and of related scientific disciplines; to develop the student's competence in reading and recognizing technical and semi popular literature on geological topics.
2. Describe the methods of investigation used to increase our scientific knowledge.
3. Present the results of these investigations: The fundamental patterns, processes and concepts active in geology.
4. Demonstrate the interrelationships among all scientific disciplines.
5. Develop competence in performing laboratory experiments and exercises related to geology.

6. Develop skills in identifying minerals and rocks, interpreting topographic maps of classic areas illustrating geologic processes and recognize phenomena that sculpture and reshape the Earth.

Student Requirements:

- o The student should study the text and portions of the lab manual as indicated in the general outline. A detailed schedule will be announced by the instructor.
- o Audio-visual aids will be used during normal class hours to supplement the text and laboratory manual. A listing of some materials may be found in the library's audio-visual index under Geology or Earth Science.
- o Instructors will describe their own grading and examination policies.

COURSE OUTLINE:

The following outline and calendar should be considered as a guide only. Each instructor may alter the choice and sequence of individual topics.

| | <u>TOPIC</u> | <u>CHAPTER</u> |
|----------|--|----------------|
| PART I | Geology (an overview) | 1 |
| | Plate Tectonics | 2 |
| | Minerals | 3 |
| PART II | Igneous Rocks and Volcanoes | 4 |
| | Weathering, Erosion, and Sedimentary Rocks | 5 |
| | Metamorphic Rocks | 6 |
| PART III | Geologic Time | 7 |
| | The Ocean Floor | |
| | Crustal Deformation and Mountain Building | 9 |
| | Earth History | 8 |
| PART IV | Earthquakes and the Earth's Interior | 9 |

CLASS CALENDAR AND ASSIGNMENTS

| DATE | TOPIC/LAB | ASSIGNMENT |
|---------|---|---|
| Week 1 | Introduction to Geology Formation of the Earth | Ch. 1 Ch. 1 |
| Week 2 | Lab 1 – Filling Your Geoscience Toolbox Plate Tectonics | Lab Manual, pp. 1-38 Ch. 2 |
| Week 3 | Plate Tectonics Lab 2 – Plate Tectonics | Lab Manual, pp. 39-70 |
| Week 4 | Minerals Lab 4 – Mineral Properties, Identification, and Uses | Ch. 3 Lab Manual, pp. 89-126 |
| Week 5 | Review for Test 1 Test 1 Igneous Rocks | Ch. 4, §§1-4 |
| Week 6 | Igneous Rocks Volcanoes Lab 5 – Igneous Rocks and Processes | Ch. 4, §5 Lab Manual, pp. 127-152 |
| Week 7 | Weathering and Erosion Sedimentary Rocks Metamorphic Rocks | Ch.5, §§1-2 Ch. 5, §§3-5 Ch. 6 |
| Week 8 | Metamorphic Rocks Lab 6 & 7– Sedimentary Processes, Rocks, and Environments; Metamorphic Rocks, Processes, and Resources | Lab Manual pp. 153-210 |
| Week 9 | Test 2 Geologic Time | Ch. 7 |
| Week 10 | Lab 9 – Dating of Rocks, Fossils, and Geologic Events The Ocean Floor | Lab Manual pp. 251-274 |
| Week 11 | Lab 10 – Topographic Crustal Deformation and Mountain Building | Lab Manual, pp. 275-308 Ch. 9, §§1-5 |
| Week 12 | Crustal Deformation and Mountain Building Earth History Lab 9 – Geologic Structures, Maps, and Block Diagrams | Ch. 8 Lab Manual pp. 211-250 |

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|---------|--|----------------------|
| Week 13 | Test 3 Earthquakes and the Earth's Interior | Ch. 9, §§6-9 |
| Week 14 | Earthquakes and the Earth's Interior Lab 3 – Earthquake Hazards and Human Risks | Lab Manual pp. 71-88 |
| Week 15 | Review for Final Exam Final Exam | |

NOTE: No make-up tests

EVALUATION:

| | |
|---------------------------------|-----|
| Quizzes and Lecture Tests | 40% |
| Labs | 30% |
| Quizzes | 20% |
| Assignments | 10% |
| Total 100% | |

Services for Students with Disabilities

Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

WebAdvisor

WebAdvisor is a web interface that allows students to access information contained in Datatel's Colleague, the administrative database used by Bergen Community College. Students may use WebAdvisor to register for classes, to pay tuition and fees, to view their class schedules, to check grades, to check on progress toward degree requirements, etc. WebAdvisor accounts are available for all students enrolled in credit programs. New students are strongly encouraged to attend an in-person registration or advisement session before using a WebAdvisor account. Eligible students without WebAdvisor user names and passwords may access their WebAdvisor account by going to go.bergen.edu and selecting "I'm new to WebAdvisor." Then, follow the on-screen directions. Check the WebAdvisor FAQ for answers to common questions, such as how to reset your password. Students must have a valid e-mail address on file with the College to use WebAdvisor