

**RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE**

GEOL – 157 INTRODUCTION TO GEOLOGY

I. Basic Course Information

- A. Course Number and Title: GEOL-157 Introduction to Geology
- B. New or Modified Course: Modified
- C. Date of Proposal: Semester: Fall 2017
- D. **Effective Term: Fall 2018**
- E. Sponsoring Department: Science & Engineering
- F. Semester Credit Hours: 4
- G. Weekly Contact Hours: Lecture: 3
 Laboratory: 2
 Out of class student work per week: 7
- H. Prerequisites/Corequisites: None
- I. Laboratory Fees Yes:
- J. Name and Telephone Number or E-Mail Address of Department Chair and Divisional Dean at time of approval: Marianne Baricevic marianne.baricevic@raritanval.edu;
Sarah Imbriglio, sarah.imbriglio@raritanval.edu

II. Catalog Description

There are no prerequisites for this course. This course is an introductory course in physical geology that examines the materials composing the Earth and seeks to understand the many processes that operate beneath and upon its surface. Applications are presented that include evaluating mineral, water, and energy resources and the nature of natural hazards. Laboratory activities include mineral and rock identification, dating of rocks and fossils, the construction of geologic maps and their interpretation, and evaluation of stream, groundwater, and shoreline data. One field trip is required for the on campus course. No field trip is required for online and summer courses.

III. Statement of Course Need

- A. This course is similar to many introductory geology courses at two- and four-year colleges. It serves as a laboratory science elective for non-science majors and as an introduction to the field of geology for all students.
- B. The laboratory component of this course is a necessary compliment to the lecture topics. Methods of geologic analysis are taught in the laboratory section.
- C. Please describe the transferability of this course.
 - 1. This course generally transfers as a laboratory science general education course.
 - 2. This course generally transfers as a laboratory science Geology program requirement.
 - 3. This course generally transfers as a laboratory science Environmental Science program elective.

IV. Place of Course in College Curriculum

- A. Free Elective
- B. This course serves as a General Education course in Science.
- C. This course meets a Program Elective for Environmental Studies.
- D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites..

V. Outline of Course Content

A. Lectures

- 1. An Introduction to Geology
- 2. Plate Tectonics: A Scientific Revolution Unfolds
- 3. Matter and Minerals
- 4. Magma, Igneous Rocks, and Intrusive Activity
- 5. Volcanoes and Volcanic Hazards
- 6. Weathering and Soil
- 7. Sedimentary Rocks
- 8. Metamorphism and Metamorphic Rocks
- 9. Geologic Time
- 10. Crustal Deformation
- 11. Earthquakes
- 12. Earth's Interior
- 13. Divergent Boundaries: Origins and Evolution of the Ocean Floor
- 14. Convergent Boundaries: Origin of Mountains
- 15. Mass Wasting: The Work of Gravity
- 16. Running Water
- 17. Groundwater
- 18. Glaciers and Glaciation
- 19. Deserts and Winds

20. Shorelines
21. Global Climate Change
22. Earth Through Geologic Time
23. Energy and Mineral Resources
24. Planetary Geology

B. Laboratories

1. Mineral Properties, Uses, and Identification
2. Igneous Rocks and Processes
3. Sedimentary Processes, Rocks, and Environments
4. Metamorphic Rocks, Processes, and Resources
5. Dating of Rocks, Fossils, and Geologic Events
6. The Metric System
7. Topographic Maps and Orthoimages
8. Stream Processes, Landscapes, Mass Wastage, and Flood Materials
9. Groundwater Processes, Resources, and Risks
10. The Jersey Shore
11. Field Trip – Sterling Hill Mine, Ogdensburg, NJ
12. The Geology of New Jersey
13. Searching for Oil with Microfossils
14. Mining and Commodities

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of the course, students will be able to:

1. Demonstrate an understanding of the natural geologic environment; its past and present; its importance in human history and economics. (GE-NJ 3)
2. Apply their knowledge of fundamental concepts by using the scientific method to perform laboratory exercises and solve question sets. (GE-NJ 3*)
(*indicates critical thinking)

B. Course Learning Outcomes:

At the completion of the course, students will be able to:

1. Identify minerals and rock types and associate them with their formation environments.
2. Date rocks and fossils by relative and numerical methods.
3. Understand topographic maps and interpret aerial photographs and remote sensing images,
4. Evaluate stream and groundwater data.
5. Compare and contrast renewable and nonrenewable resources of energy.
6. Interpret and describe the geologic history of New Jersey.

C. Assessment Instruments

1. laboratory products
2. other (question sets)

VII. Grade Determinants

- A. laboratory reports
- B. question sets
- C. quizzes
- D. exams
- E. presentations

The primary formats, modes, and methods for teaching and learning that may be used in the course:

- A. lecture/discussion
- B. small-group work
- C. laboratory
- D. student oral presentations
- E. other – online Forums

VIII. Texts and Materials

- A. Suggested textbooks
 1. Earth: An Introduction to Physical Geology, 11/E
Edward J. Tarbuck, Frederick K. Lutgens, Dennis Tasa
ISBN-10: 0321813936 ISBN-13: 9780321813930
Publisher: Prentice Hall
Copyright: 2014
 2. Laboratory Manual in Physical Geology, 10/E
Richard M. Busch
ISBN-10: 0321944518 /ISBN-13: 9780321944511
Publisher: Prentice Hall
Copyright: 2015
- B. student writing
- C. film and video
- D. web sources
- E. other computer-based sources

The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

- A. Provisions for one Saturday field trip (include one bus)
- B. Collection of minerals, rocks, and fossils

C. Geologic maps

X. Honors Options

- not relevant