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 Year: 2022

D. Effective Term: Fall 2023

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. ☐ Prerequisite (s): None
☐ Corequisite (s): None
☐ Prerequisite (s) and Corequisite (s): None

I. Additional Fees**:** None

J. Name and 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.

III. Statement of Course Need

A. This course is similar to many introductory geology courses at two- and four-year colleges. It is required for environmental science majors. Additionally, this course serves as a laboratory science elective for environmental studies majors, and non-science major. This course is 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. This course meets a Program course requirement for Environmental Science.
B. This course meets a Program Elective for Environmental Studies.
C. This course serves as a General Education course in Science.
D. Free Elective
E. 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 and Planetary Geology
   10. Crustal Deformation
   11. Earthquakes and Earth's Interior
   12. Divergent Boundaries: Origins and Evolution of the Ocean Floor
   13. Convergent Boundaries: Origin of Mountains
   14. Mass Wasting: The Work of Gravity
   15. Running Water

16. Groundwater
17. Glaciers and Glaciation
18. Deserts and Winds
19. Shorelines
20. Renewable and Nonrenewable Energy and Mineral Resources

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 and Topographic Map
7. Stream Processes, Landscapes, Mass Wastage, and Flood Materials
8. Groundwater Processes, Resources, and Risks
9. The Jersey Shore
10. The Geology of New Jersey

VI. A. Course Learning Outcomes:

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

1. Demonstrate an informed understanding of fundamental geological concepts and apply those concepts to real world issues. (GE-3)
2. Apply their knowledge of fundamental concepts by using the scientific method to perform laboratory exercises and solve question sets. (GE-3*) (*indicates critical thinking)
3. Identify minerals and rock types and associate them with their formation environments.
4. Date rocks and fossils by relative and numerical methods.

B. Assessment Instruments

Given the outcomes described above, the following assessment methods may be used:
1. Class discussions
2. Assignments
3. Laboratory activities
4. Presentations

VII. Grade Determinants

A. Exams
B. Assignments
A. Quizzes
B. Laboratory report
C. Project

D. Online Discussions
E. Research paper

Given the goals and outcomes described above, LIST 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. Computer-assisted instruction
D. Online discussions
E. Laboratory
F. Presentations

VIII. Texts and Materials

A. Suggested textbooks
   1. OER Textbook - An Introduction to Geology; Free Textbook for College-Level Introductory Geology produced by staff from the Salt Lake Community College (http://opengeology.org/textbook/).
   2. Laboratory Manual in Physical Geology, 10/E Richard M. Busch ISBN-10: 0321944518 /ISBN-13: 9780321944511 Publisher: Prentice Hall Copyright: 2015
B. Web sources
C. Virtual labs
D. 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. Collection of minerals, rocks, and fossils
B. Geologic maps