I. Basic Course Information

A. Course Number and Title: GEOL-157 Introduction to Geology

B. Date of Proposal: February, 2007

C. Sponsoring Department: Science & Engineering

D. Semester Credit Hours: 4

E. Weekly Contact Hours:  
   Lecture: 3
   Laboratory: 2

F. Prerequisites: None

G. Laboratory Fees: Yes

II. Catalog Description

This course is a study of the earth’s structure, composition and history; processes which shape the earth’s surface, such as glaciation, crustal movements and tectonics, erosion, and sedimentation; fossil study; classification and characterization of rocks; applied geology of mineral, energy, water and ocean resources; and of natural hazards. Laboratory activities include rock classification, air photo and topographic map interpretation, practical problems in environmental geology, and trips to field locations in New Jersey. Four Saturday field trips required.

III. Statement of Course Need

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.

IV. Place of Course in College Curriculum

A. This course is a General Education course in Laboratory Science.

B. The course transfers readily as a lab science elective

V. Outline of Course Content
LECTURE:

1. Introduction to geology
2. Plate tectonics
3. Matter and minerals
4. Minerals and crystal growth
5. Igneous rocks
6. Volcanos and other igneous activity
7. Weathering and soil
8. Sedimentary rocks
9. Metamorphism and metamorphic rocks
10. Geologic time
11. Crustal deformation
12. Earthquakes
13. Earth’s interior
14. Divergent boundaries: Origins and Evolution of the Ocean Floor
15. Convergent boundaries: Mountain Building and the Evolution of the Continents
16. Mass wasting: the work of gravity
17. Running water
18. Groundwater
19. Glaciers and glaciation
20. Deserts and winds
21. Shorelines
22. Energy and wind sources
23. Planetary geology

VI. Educational Goals and Learning Outcomes

Educational Goals

Students will:

1. Demonstrate an understanding and appreciation of the natural geological environment; its past and present; its importance in human histories and economies. (G. E. 4, 7)
2. Apply their knowledge in both laboratory and field settings, writing reports that reflect and analyze their experiences. (G. E. 2, 3, 7)

Learning Outcomes

The student will be able to:
1. Identify various minerals and rock types and associate them with geomorphic processes (mineralology).
2. Identify various fossil animal and plant types and associate them with geologic time.
3. Explain crustal movements and plate tectonics, and relate these to particular events of continental drift, mountain building and subsidence.
4. Explain the many variables affecting geologic water resources -- geomorphology, aquifers, topography, erosion.
5. Apply geologic principles to evaluating land use policies.
6. Describe and explain the varied geologic history of the New Jersey landscape.
7. Identify the geological processes which produced fossil fuel energy resources, and those which produce geothermal energy.

VII. Modes of Teaching and Learning

- lecture/discussion
- small-group work
- laboratory
- field trips

VIII. Papers, Examinations, and other Assessment Instruments

- laboratory reports
- field trip reports
- quizzes
- exams
- final exam

IX. Grade Determinants

- laboratory reports
- field trip reports
- quizzes
- exams
- final exam

X. Texts and Materials

Suggested Texts:

1. *Earth - An Introduction to Physical Geology*
   
   Tarbuck EJ and Lutgens FK
   
2. *Exercises in Physical Geology*
   
   Hamblin WK and Howard JD
XI. Resources

Provisions for Saturday field trips, including the possible use of college vehicles, are required.

XII. Honors Options

Not applicable