

## General Geology

Introductory Geology is a valuable tool for teaching the nature of science and how science advances given that the change in paradigm is well-known (for example, plate tectonics) and the relationship between progress in science and invention of new technologies is clear (for example, seismology). However, while the use of a geology course for teaching the nature of science necessitates teaching some basic geologic concepts, this approach greatly minimizes the required learning of specific, detailed subtopics within geosciences. Below are the basic geologic concepts that are essential to understanding the nature of science as taught in geology. For each, students should be able to:

### I. Tectonics.

- 1) Describe the evidence leading to the Theory of Plate Tectonics.
- 2) Describe the interior structure of the earth.
- 3) Interpret the distribution of earthquakes, volcanoes, mountain building, etc. in terms of the Theory of Plate Tectonics.
- 4) Recognize geologic structures produced by tectonic forces.

### II. Earth Materials

- 1) Describe the processes involved in the Rock Cycle.
- 2) Describe the properties of minerals used in their identification.
- 3) Explain how rocks are classified using criteria such as composition and texture; know how this process would apply to the most common types of igneous, metamorphic and sedimentary rocks.

### III. Surface Processes

- 1) Describe the various processes in the decomposition of rock.
- 2) Describe how materials are eroded, transported and deposited (e.g. by water, wind, ice, gravity).
- 3) Explain how erosion, transportation and deposition produce and/or modify landforms.
- 4) Describe the interaction between surface water and groundwater.
- 5) Evaluate the earth-human interaction.

### IV. Geologic Time

- 1) Recognize major earth events in the framework of geologic time.
- 2) Differentiate between absolute and relative dating.
- 3) Describe and apply the principle of uniformitarianism.
- 4) Explain how the concepts of faunal succession and stratigraphic correlation have been used to develop the geologic time scale.