

## **NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY GOL 105 – PHYSICAL GEOLOGY (4 CR.)**

### **Course Description**

Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

### **General Course Purpose**

This introductory course in geology is intended to meet the needs of the student pursuing a career in Earth or natural sciences or the student seeking to fulfill a laboratory science requirement for other majors. The course covers the materials, processes, interior structure and landforms found on Earth.

### **Course Prerequisites/Corequisites**

Understand high-school level general science and mathematics

### **Course Objectives**

Upon completing the course, the student will be able to:

- a) diagram the Earth's structure and describe the composition of each layer;
- b) describe the theory of plate tectonics and the processes of seafloor spreading and subduction;
- c) describe the causes of and links between of volcanism and seismic activity and why they occur;
- d) detail the nature of layered rocks and the processes that fault and fold them;
- e) recognize common minerals by their appearance and/or properties;
- f) explain the three basic categories of rocks and common subtypes;
- g) explain the causes and agents of weathering and erosion and the formation of soils;
- h) describe the processes and results of surface shaping by moving water and ice, by wind, and by gravity.
- i) distinguish between unique geologic features and processes in fluvial, glacial, eolian, and coastal terrain.

### **Major Topics to be Included**

#### Planet Construction

Layers of the interior—core, mantle, lithosphere, crust, hydrosphere, atmosphere  
Tectonics—plate structure, continental drift, spreading ridges, subduction

#### Materials and Organization

Minerals—composition, appearance, properties  
Rocks—classification into igneous, metamorphic, sedimentary categories;  
formation, composition, interpretation  
Sedimentary Layers—principles of formation and relative geologic dating  
Volcanoes—types, processes, and eruptive output  
Intrusions—types, stratification, and variations of composition  
Metamorphism—effects of heat and/or pressure, folding and faulting  
Hydrosphere—distribution of water on Earth, composition of seawater  
Atmosphere—distribution and composition, the hydrologic cycle

## Landforms

Basic map reading—longitude and latitude, aerial photography

Topographic maps—slope and gradient, interpretation of contours

Geologic maps—interpretation of age, rock type, and basic geologic structure

## Processes and Agents of Change

Weathering and Erosion—mechanical and chemical breakdown of rock, soil formation

Coastlines—consequences of wave and storm activity, beach landforms, longshore drift

Glaciers—structure, formation and retreat, typical features of glacial terrain

Rivers—anatomy, watersheds, measurement of discharge

Mass Wasting—landslides, soil creep, and effects of saturation

Deserts—shape and internal structure of windblown deposits, eolian processes