

GEOLOGY (GEOL)

GEOL 1110G Physical Geology 4 Credits (4)

Physical Geology is an introduction to our dynamic Earth introducing students to the materials that make up Earth (rocks and minerals) and the processes that create and modify the features of our planet. The course will help students learn how mountains are formed, how volcanoes erupt, where earthquakes occur, and how water, wind, and ice can shape landscapes. Students will also develop a basic understanding of the ways humans have altered the planet including our impact on natural resources and global climate change. (3+3P)

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GEOL 1150 Introduction to Rocks & Minerals 3 Credits (3)

This course is an introduction to the characteristics and the formation of the three main types of rocks, the rock-forming minerals, and important ore minerals. An outline of Plate Tectonics (Continental Drift) will give students the basis to understand how many of these rocks and minerals form. In laboratory exercises, students will gain practice in describing and identifying hand-specimens of the main types of rocks and minerals. (2+3P)

Prerequisite(s)/Corequisite(s): GEOL 1110G

Learning Outcomes

1. The student Identify the main rock-forming minerals from each mineral group as demonstrated by scoring a total of 70% or more on the relevant laboratory exercise component. Studying minerals, the student will:
 - a. Identify the main silicate minerals in hand specimens.
 - b. Describe the environments in which these minerals form.
 - c. Identify the rock types in which these minerals are found.
 - d. Identify the main carbonate minerals in hand specimens.
 - e. Describe the environments in which these minerals form.
 - f. Identify the rock types in which these minerals are found.
 - g. Identify the main sulphide minerals in hand specimens.
 - h. Describe the environments in which these minerals form.
 - i. Identify the rock types in which these minerals are found.
 - j. Identify the main sulphate minerals in hand specimens.
 - k. Describe the environments in which these minerals form.
 - l. Identify the rock types in which these minerals are found.
 - m. Identify the main halide minerals in hand specimens.
 - n. Describe the environments in which these minerals form.
 - o. Identify the rock types in which these minerals are found.
 - p. Identify the main oxide minerals in hand specimens.
 - q. Describe the environments in which these minerals form.
 - r. Identify the rock types in which these minerals are found.
 - s. Identify the main native elements in hand specimens.
 - t. Describe the environments in which these minerals form.
 - u. Identify the rock types in which these minerals are found.
2. The student will understand the structure, composition, and genesis of rocks by identifying the principal igneous, sedimentary, and metamorphic rocks, as demonstrated by scoring a total of 70% or more on the relevant laboratory exercise components.
3. Studying rocks, the student will:
 - a. Define the principal igneous processes and features, identify the most common igneous rocks and their constituting minerals in hand specimens, and discuss their origin and interpretation.
 - b. Describe the principles of sedimentary processes and features, identify the most common sedimentary rocks in hand specimens, and discuss their origin and interpretation.
 - c. Describe the principles of metamorphic processes and features, identify the most common metamorphic rocks and constituting minerals in hand specimens, and discuss their origin and interpretation.

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GEOL 2130 Introduction to Meteorology 4 Credits (4)

Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. (3+3P)

Learning Outcomes

1. Recall, describe, or explain the various elements of the Earth's atmosphere, Earth's relation to the sun, incoming solar radiation, the ozone layer, the primary temperature controls, and the unequal heating of land and water.
2. Recall, describe, or explain weather variables and parameters.
3. Recall, describe, or explain air masses, pressure systems, the various fronts and associated types of storms, weather symbols, monsoons, the various forms of precipitation, along with causes and effects of lightning.
4. Recall, describe, or explain the hydrologic cycle, the characteristics and influences of the oceans and continents on the weather, the Southern Oscillation (i.e., El Niño), and the effects of land/water distribution.
5. Recall, describe, or explain specific impacts by humans on weather, climate, and on the ecosystem at large.
6. Evaluate and interpret information from maps, diagrams, remote sensing devices, graphs, and tables.
7. Apply critical thinking skills such as inductive, deductive, and mathematical reasoning to solve problems using the scientific method.
8. Recognize and discuss the effect of human activity on climate, climate change and the greenhouse effect.
9. Synthesize information from external, current sources and personal observations and discuss their relationships to class material.

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GEOL 2996 Topics in Geology 1-3 Credits

Specific subjects to be announced in the Schedule of Classes.

Repeatable: for a maximum of 12 credits.

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