Bemidji State University

GEOL 1110: Physical Geology

A. COURSE DESCRIPTION

Credits: 4
Lecture Hours/Week: 0
Lab Hours/Week: 0
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None

MnTC Goals: Goal 03 - Natural Science, Goal 10 - People/Environment

Physical geology is the study of the Earth system, minerals, rocks, the processes that operate upon Earth, the landforms that originate from them. Natural hazards and mineral resources are also studied. The course will demonstrate that the planet is a completely integrated, continually evolving and dynamic system. The course is also aimed to create an awareness of how it affects our life and our responsibility to the planet and its future. Lecture and laboratory. [Core Curriculum Goal Area(s) 3 & 10 (LC)]

B. COURSE EFFECTIVE DATES: 08/26/1997 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Introduction and unifying concepts in Geology
2. Minerals
3. Igneous Rocks, classification by texture and mineralogy. Geologic factors affecting rock composition
4. Volcanism; types of volcanoes; their behavior, and geologic significance.
5. Weathering and production of sediments, Classification of sedimentary rocks,
6. Interpretation of sedimentary rocks, Metamorphic rocks.
7. Geologic Structures, classification and interpretation of folds, faults, and fractures; Earth's interior
8. Mountain building, Geologic time,
9. Mass wasting
10. Rivers and streams
11. Groundwater resources
12. Glaciation
13. Details of plate tectonics
14. Earth's resources
15. Geologic resources, energy sources, metals, and non-metals.
D. LEARNING OUTCOMES (General)

1. recall or recognize selected geological terms and concepts from the topics covered and employ them in understanding.
2. analyze physical properties to describe, identify and classify minerals.
3. analyze physical properties, textures and other properties to classify igneous, sedimentary and metamorphic rocks.
4. differentiate the internal structure and composition of the Earth.
5. differentiate between the three types of plate boundaries by noting common geologic features and processes. Summarize how these boundaries form. Describe the topographic features associated to them.
6. identify strata, faults, and folds in geologic sections and explain the forces and tectonic settings that lead to their formation.
7. apply the principles of relative dating to interpret the geologic history of a given region and understand the application of radiometric dating to the geologic time scale.
8. explain the various parts of the hydrologic cycle including the interaction of surface and groundwater with the solid Earth.
9. describe the changes and connections between Earth's climate and geography, with plate tectonic movement and life evolution. Explain the influence of humans on Earth's history.
10. evaluate the risks associated with geologic hazards.
11. explain the origin and classification of common sources of energy and mineral resources, their uses, and environmental consequences.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 03 - Natural Science

1. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
2. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.
3. Demonstrate understanding of scientific theories.
4. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

Goal 10 - People/Environment

1. Explain the basic structure and function of various natural ecosystems and of human adaptive strategies within those systems.
2. Discern patterns and interrelationships of bio-physical and socio-cultural systems.
3. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.
4. Propose and assess alternative solutions to environmental problems.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted