

Earth Science / Geology

Credit – ½

Term(s) – 1 Semester

Text: Earth Science, Spalding & Namowitz.

Prerequisites: There are no specified prerequisites, but basic algebra is recommended.

Course Description

This course is an introduction/survey of the basic concepts of Earth science/geology. This course is offered during first semester. It is recommended that the student take this course in conjunction with Meteorology and Space Science.

Course Content

Major units of study include the rock cycle, rock and mineral identification, plate tectonics, volcanism, earthquakes, groundwater/karst topography, geologic history, glaciations, and map reading/analysis.

Course Format

Students will be involved in lecture/discussion, reading of current geology literature, internet research, homework assignments, and hands-on laboratory work. Students will utilize real time data in their lab activities, as well as researching the most current information in their study of Earth science/geology and its numerous systems.

Course Expectations

Students will be expected to complete homework, readings, research, and laboratory activities.

Grades

Each student will be graded on homework, quizzes, unit tests, research, and laboratory activities.

Course Objectives

13A.904 Demonstrate an understanding of ethical decision making in the sciences at grade appropriate level

13A.905 Demonstrate an understanding of the proper development and use of scientific information at grade appropriate level

13B.702 Demonstrate an understanding of the relationship between science and technology at grade appropriate level

13B.703 Demonstrate an understanding of the impact of science on our society at grade appropriate level

11A.601 Evaluate data from experiments using graphs and other appropriate analytical tools at grade appropriate level

- 11A.602 Apply problem-solving skills to scientific situations at grade appropriate level
- 11A.501 Demonstrate appropriate laboratory skills and equipment usage, applying accepted practices at grade appropriate level
- 11A.502 Demonstrate the use of appropriate scientific tools to measure accurately using the metric system at grade appropriate level
- 11A.603 Conduct research on science topics using a variety of accepted sources at grade appropriate level
- 11A.604 Communicate scientific understandings effectively in written and oral presentations at grade appropriate level
- 11A.701 Conduct an appropriate controlled scientific investigation at grade appropriate level
- 11A.901 Differentiate between a scientific theory, hypothesis, opinion and fact at grade appropriate level
- 11A.902 Demonstrate an understanding of science as an ongoing process open to the collection of new data the reevaluation of existing data by critically analyzing scientific theories for supporting and non-supporting evidence or by explaining how theories are formulated, accepted, rejected, and changed over time at grade appropriate level
- 11B.903 Design and conduct a controlled scientific investigation at grade appropriate level

Structure and History of the Earth

- 12E.969 Explain the current geological theory on the age and the formation of the Earth
- 12E.970 Describe the scientific methods, data, and assumptions on which this theory and the age of the Earth are based, and identify at least one piece of data, from those explained in class, that provides for differences in how the theory or age is interpreted
- 12E.971 Read a geologic column to determine relative dates
- 12E.972 Describe and diagram the structure and internal energy flow of the Earth

Surface Processes

- 12E.973 Explain the history of the Theory of Plate Tectonics along with why is the current theory
- 12E.974 Explain plate motion through the mechanism of convection and density
- 12E.975 Explain the occurrence of volcanoes and earthquakes through Plate Tectonics
- 12E.976 Identify minerals and rocks using their physical and chemical properties
- 12E.977 Explain pros and cons of different resource gathering method
- 12E.978 Using seismic data and appropriate charts, locate and size an earthquake
- 12E.979 Describe an Ice Age, how it occurred, and what it means to Illinois and rest of the world

Surface Processes

- 12E.980 Explain the cyclicity of the Earth's climate using the past
- 12E.981 Cite evidence for past glaciation
- 12E.982 Diagram the hydrologic cycle, indicating the sun as the source of energy