



STAFFORD COUNTY PUBLIC SCHOOLS

Curriculum Overview Earth Science Level II Geology

Course Description:

This is an in-depth course dealing with the physical and historical aspects of the Earth most suited for students who have a strong interest in science. Emphasis will be placed on those geological processes and features that the student has encountered or may encounter during his lifetime. Extensive laboratory experiences and occasional field excursions are provided to enhance the students understanding and application of the course material.

Essential Skills/Processes:

The goals of the course are to educate the student in the material content of Geology, to increase science inquiry skills and logical thinking, and foster positive attitudes for further science study.

Essential Knowledge:

Essential knowledge and skills is categorized into six strands.

Science as Process:

- Data collected, recorded, reported, and analyzed with appropriate terminology and instruments.
- A key used to identify unknown minerals and fossils.
- Maps and models used and constructed to show physical structures of the Earth.
- Topographic maps used to figure bearings, elevations, distance and gradient, and to construct profiles.
- Field trips used to gather specimens and make observations.
- Appropriate techniques used in the gathering and preparation of specimens.
- Tools used in specimen preparation including the rock saw, tumbler, and vibrating lap.
- The development of scientific methodology in the history of geology.
- An emphasis on laboratory safety.

Physical Geology:

- Earth chemistry.
- Geomorphology including reading of topographic maps, characteristics and dynamics of coastlines, streams and lakes, landslides, glaciology, and wind processes.
- Dynamics of change will include erosion, deposition, flooding, desertification, landslides, and mass wasting.
- Groundwater quality, aquifer dynamics, and karst.
- Petrology including igneous, sedimentary, and metamorphic rocks.
- Ocean basins and land forms, ophiolites, and sediments.

- Ores and minerals.
- Volcanology including intrusive and extrusive processes.
- Weathering due to mechanical and chemical processes and soil formation.
- Plate tectonics including continental drift, seafloor spreading, paleomagnetism, plate boundaries, polar wandering, and terranes.
- Seismology and earthquakes, including causes, scales, seismic waves, epicenters, and prediction
- Interior structure of the Earth.

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