

DOWNEY UNIFIED SCHOOL DISTRICT  
Middle School Course Outline

**Course Title:** General Science - Earth Science (One Semester)

**Grade Level:** 6

**Prerequisites:** None

**Course Description:**

This course presents the basic aspects of earth science. The content areas include: geology, ecology, meteorology, and the transfer of energy in Earth's system. Science process skills and career exploration are integrated in the content areas.

**Student Performance**

**Objectives for this**

**Course:**

***PLATE TECTONICS AND EARTH'S STRUCTURE***

1. Plate tectonics explains important features of the Earth's surface and major geologic events. As the basis for understanding this concept, students will:
  - a. Provide evidence for plate tectonics including the fit of the continents, location of earthquakes, volcanoes, and midocean ridges, and the distribution of fossils, rock types, and ancient climatic zones.
  - b. Diagram or model the solid Earth as layered with a cold, brittle lithosphere; hot, convecting mantle; and dense, metallic core.
  - c. Link movements in the mantle to lithospheric plates that are the size of continents to oceans, which move at rates of centimeters per year.
  - d. Compare and contrast earthquakes as sudden motions along breaks in the crust called faults, and volcanoes/fissures, which are locations where magma reaches the surface.
  - e. Explain that major earthquakes, volcanic eruptions, and mountain building all result from plate motions.
  - f. Explain major features of California geology in terms of plate tectonics (including mountains, faults, and volcanoes).
  - g. Determine the epicenter of an earthquake and how the effects of an earthquake vary with its size, distance from the epicenter, local geology, and the type of construction involved.

## **Earth Science - continued**

### ***SHAPING THE EARTH'S SURFACE***

2. Topography is reshaped by weathering of rock and soil and by the transportation and deposition of sediment. As the basis for understanding this concept, students will:
  - a. Give examples of how earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitats.

### ***PHYSICAL SCIENCE: HEAT (THERMAL ENERGY)***

3. Heat moves in a predictable flow from warmer objects to cooler objects until all objects are at the same temperature. As a basis for understanding this concept, students will:
  - a. Demonstrate that energy can be carried from one place to another by heat flow, or by waves including water waves, light and sound, or by moving objects.
  - b. Describe how most of the energy released becomes heat energy when fuel is consumed.
  - c. Illustrate how heat flows in solids by conduction (which involves no flow of matter) and in fluids by conduction and also by convection (which involves flow of matter).
  - d. Explain how heat energy is also transferred between objects by radiation; radiation can travel through space.

### ***ENERGY IN THE EARTH SYSTEM***

4. Many phenomena on the Earth's surface are affected by the transfer of energy through radiation and convection currents. As a basis for understanding this concept, students will:
  - a. Identify the sun as the major source of energy for phenomena on the Earth's surface such as powering winds, ocean currents, and the water cycle.
  - b. Diagram how the heat from Earth's interior reaches the surface primarily through convection.
  - c. Compare how differences in pressure, heat, air movement, and humidity result in changes of weather.

## Earth Science – continued

### ***LIFE SCIENCE: ECOLOGY***

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept, students will:
  - a. Diagram how energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis and then from organism to organism in food webs.
  - b. Illustrate how over time, matter is transferred from one organism to others in the food web, and between organisms and the physical environment.
  - c. Give examples of how different kinds of organisms may play similar ecological roles in similar biomes.

### ***INVESTIGATION AND EXPERIMENTATION***

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other three strands, students should develop their own questions and perform investigations. Students will:
  - a. Develop a hypothesis.
  - b. Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
  - c. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
  - d. Communicate the steps and results from an investigation in written reports and verbal presentations.
  - e. Recognize whether evidence is consistent with a proposed explanation.

## **Earth Science – continued**

### **Instructional Strategies**

1. Lecture/note-taking
2. Observation/demonstration
3. Laboratory hands-on experimentation
4. Written assignments
5. Group projects
6. Audio-visual aids
7. Tests
8. Games/simulations
9. Reading/responding to text, graphs, charts, magazines

### **Instructional Units – Organized by Standards Unit**

Technology:

- Computers for research projects
- Require one internet based research project per student per semester
- Implement Power Point Presentations

### **Instructional Units - Organized by Text/Chapter**

Chapter 1 (Section 2)  
Chapter 2 (Section 2)  
Chapter 3 (Sections 1,2)  
Chapter 4 (Sections 1, 2, 3)  
Chapter 5 (Sections 1, 2, 3, 5)  
Chapter 7 (Section 3)  
Chapter 9 (Sections 1, 3)  
Chapter 10 (Sections 2, 3)  
Chapter 11(Sections 1, 2, 3, 4)  
Chapter 12 (Sections 1, 2, 3, 4)  
Chapter 13 (Section 4)  
Chapter 14 (Sections 1, 2, 3, 4)

## **Earth Science – continued**

Chapter 15 (Sections 1, 2, 3, 4, 5)

Chapter 16 (Sections 1, 2, 4)

Chapter 17 (Sections 2, 3, 4)

Chapter 18 (Sections 1, 2, 3)

Chapter 19 (Sections 1, 2, 3, 4, 5)

Chapter 20 (Sections 1, 2, 3, 4)

Chapter 21 (Sections 1, 2, 3, 4)

*\*Note: According to the textbook’s correlation to the State Science Standards/student performance objectives, there are 56 text sections to be covered in the four units (Thermal Energy, Energy in the Earth, Life Science: Ecology, and Resources). With 85 student days in a semester, teachers may allocate 1-2 days per section, depending upon the particular topic/concept.*

## **Evaluation**

Performance-based testing

Performance-based projects and testing

Teacher observation

Homework

Tests and quizzes

Completion and quality of assignments

## **Materials and Resources**

Student Textbook:

Focus on Earth Science

Science Explorer – California Edition

Prentice Hall