

Earth Science Regents

**EARTH SCIENCE REGENTS – 4100, 4105 Full year - 1 credit**

Grade 9

Prerequisites: 4100: Successful completion of eighth grade science

4105 CT: Faculty recommendation

This course approaches the study of Earth Science from a conceptual and empirical point of view. All major aspects of astronomy, geology, and meteorology are studied. The course has alternating lab periods each week (meets 7 or 8 times each week). The Earth Science Regents Examination terminates the course.

**Knowledge and Skills Objectives**

The instruction is focused on student understanding and demonstration of important relationships, processes, mechanisms, and applications of concepts. Students, in attaining scientific literacy, will be able to demonstrate these explanations, in their own words, exhibiting creative problem solving, reasoning, and informed decision making. Future assessments will test student's ability to explain, analyze, and interpret Earth science processes and phenomena, and generate science inquiry. Through this curriculum, students will be able to do the following:

- Students will use mathematical analysis, scientific inquiry, and engineering designs as appropriate, to pose questions, seek answers, and develop solutions.
- Students will access, generate, process, and transfer information, using appropriate technologies.
- Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.
- Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

Critical to understanding science concepts is the use of scientific inquiry to develop explanations of natural phenomena. Therefore, as a prerequisite for admission to the Regents examination in Physical Setting/Earth Science, students must have successfully completed 1200 minutes of laboratory experience with satisfactory written reports for each laboratory investigation.

**EARTH SCIENCE REGENTS SELF-CONTAINED**

## **Overview of Course**

This self-contained Earth Science course approaches the study of Earth Science from a conceptual and empirical point of view. All major aspects of astronomy, geology, and meteorology are studied. The course has alternating lab periods each week. It is the goal of this class to prepare students to take the General Science (RCT) Regency Competency Test.

## **Instructional Philosophy**

The mission of the self contained special class is to provide the highest level and quality of academic instruction in the least restrictive environment to students who have been identified as requiring special modifications to the curriculum. The self contained classes are dedicated to presenting materials in a variety of learning channels to enhance instruction and increase understanding. Differentiation is a hallmark of these programs which are designed to consider the individual needs of the students and provide the greatest opportunity for all participants to achieve their I.E.P. goals. Group and individual instruction provides a nurturing learning environment which fosters both appropriate social and academic skills.

## **EARTH SCIENCE REGENTS: Units of Study**

### **I. Scientific Inquiry and Skills**

- A. Observation and Inferences
- B. Classification
- C. Measurement
- D. Conversion
- E. Percent Error (deviation)
- F. Graphing
- G. Scientific Notation
- H. Density

### **II. Earth's Dimensions / Mapping**

- A. Shape
- B. Latitude / Longitude

C. Topographic Maps

D. Contour Maps

III. **Astronomy**

A. Geocentric and Heliocentric models

B. Kepler's laws

C. Big Bang Theory

D. Galaxies / Stars

E. Moon Phases

F. Planets

G. Sun

H. Earth's Rotation and Revolution

I. Earth's Seasons (celestial sphere)

IV. **Meteorology**

A. Energy

1. Electromagnetic Spectrum

2. Insolation / Conduction / Radiation

3. Greenhouse Effect

4. Specific Heat

5. Phases of Matter

6. Heating Curve of Water

B. Weather / Climate

1. Definitions and Variables

2. Relative Humidity and Dewpoint

3. Air pressure- high and low pressure systems
4. Isobars
5. Cloud formation
6. Air masses / Fronts
7. Orographic Effect
8. Station Models
9. Severe Weather

**V. Hydrology and Water Cycle**

- A. Water Cycle
- B. Precipitation reaching the ground
  1. Infiltration
  2. Runoff
  3. Storage
  4. Evaporate
- C. Porosity and Permeability
- D. Infiltration
  1. Ground water zones
  2. Discharge
  3. Capillary Action
  4. Aquifer
- E. Weathering
- F. Erosion
- G. Deposition

## VI. **Dynamic Earth**

- A. Continental Drift
- B. Plate tectonics
- C. Plate boundaries
  - 1. Convergent
  - 2. Divergent
  - 3. Transform
- D. Earthquakes

## VII. **Rocks and Minerals**

- A. Minerals
- B. Rocks
  - 1. Igneous
  - 2. Sedimentary
  - 3. Metamorphic
- C. Rock Cycle

## VIII. **Geologic History**

- A. Geologic sequence
- B. Correlation
- C. Geologic history
- D. Absolute Ages
- E. Evolution

## **Major Resources**

*Earth Science the Easy Way (Barron's E-Z Series) (Paperback)*

*Alan D. Sill*

*UPCO's Physical Setting Review "Earth Science"*  
*Robert B. Sigda*

*Heath Earth Science*  
*Spaulding Namowitz*

<http://www.emsc.nysed.gov/ciai/mst/pub/earthsci.pdf>