

**Westmoreland County Public Schools**  
**Integrated Instructional Pacing Guide**  
**Earth Science 2011-2012**

Text: Earth Science by Spaulding & Namowitz (published by McDougal Littell)

**Week 1 –**

**Topics:**

- Earth as a System
- Earth Cycles
- Scientific methods
- Controls & variables
- Scientific prefixes & suffixes

**Text Sections:** Ch 1, 2

**SOL's:** 1b,e; 2a-d; 3b; 7a,b,d; 9e; 12d;14e

**Lab:**

- Water Cycle with red dye or salt

**Demos:**

- Transpiration, p11
- Ground water, p9
- Chalk, p15
- Map projections

**Variations:**

- Westmoreland quadrangle
- GPS field study

**Week 2–**

**Topics:**

- Modeling Planet Earth
- Mapping & Technology
- GPS
- Latitude & longitude
- Scale
- Topographic maps
- Earth's formation
- Earth's structure
- Rotation & revolution

**Text Sections:** Ch 3, 4

**SOL's:** 1c; 3a-d; 4a-c; 13b,d; 14a,b

**Lab:**

- Writable, inflatable globes
- Mercator Treasure Maps
- Topography/Linear profile (Handout)

**Demos:**

- Sun/moon/Earth eclipse rotations
- Cornstarch as liquid/solid

**Variations:**

- Reason for the Seasons (NSTA)

**Week 3–**

**Topics:**

- Matter & Atoms
- Composition/structure of minerals
- Identifying Minerals
- Mineral properties
- Mineral uses
- Silicates
- Crystals

**Text Sections:** Ch 5

**SOL's:** 5a,b; 7a

**Lab:**

- Mineral Identification (Handout)
- Measuring Specific Gravity, p112

**Demos:**

- Atom Model Kit
- Radioactivity
- Fluorescence & Phosphorescence
- Halite with a hammer

**Variations:**

- Make crystals
- Make paper crystals

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**Week 4–**

**Topics:**

- How Rocks form
- Igneous Rocks
- Sedimentary Rocks
- Metamorphic Rocks
- The Rock Cycle
- Energy resources
- Renewable & Nonrenewable
- Virginia's resources
- Environmental issues
- Global warming

**Lab:**

- Rock Identification (Handout)
- Rice & Clay, p133
- Ocean Floor Magnetism
- Observing greenhouse gases, p478

**Demos:**

**Variations:**

- Studying Rocks in Thin Section, ch 6
- Lab - Cooling Rates of Crystals

**Text Sections:** Ch 6, 7

**SOL's:** 1a; 2a,c,d; 6all; 7all; 8a; 9a,e; 11b,e; 12e

**Week 5–**

**Topics:**

- Plate Tectonics
- Types of Plate Boundaries
- Causes of Plate Movement
- Pangaea
- How & When volcanoes form
- Magma & erupted materials
- Volcanic landforms

**Lab:**

- Pangaea Breakup (Handout)
- Mapping Volcanoes, p208
- Identifying types of Volcanoes (Handout)

**Demos:**

- Film canister explosion
- Convection fluid

**Variations:**

- Geopatterns (NSTA)
- Solid or Liquid (NSTA)
- Convection (NSTA)

**Text Sections:** Ch 8, 9

**SOL's:** 1b; 4a,d; 6a; 8b,c; 11d

**Week 6–**

**Topics:**

- Earthquakes
- Locating/measuring earthquakes
- How/where earthquakes occur
- Earthquake hazards
- How/where mountains form
- Faults

**Lab:**

- Locating an epicenter (Handout)

**Demos:**

- Wooden blocks - faults

**Variations:**

**Text Sections:** Ch 10, 11

**SOL's:** 1b,c,e; 2a,e; 3b; 8a,b,c

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**Week 7–**

**Topics:**

- Weathering/erosion
- Soil formation
- Mass movements
- Soil as a resource
- Streams & Rivers
- Stream erosion and deposition
- River valleys
- Floodplains & floods

**Lab:**

- Rock Shake Lab (ES text lab manual)
- River Systems Map Activity, p294
- Mapping Virginia's watersheds

**Demos:**

**Variations:**

- Analyzing soil types (Handout)

**Text Sections:** Ch 12, 13

**SOL's:** 1a-e; 2a,c,e; 3a; 7c,e; 8a,b; 9a,c,d,e,f

**Week 8–**

**Topics:**

- Groundwater
- Porosity
- Water table
- Aquifers
- Karst topography
- Glaciers
- Glacial movement & erosion
- Ice Ages

**Lab:**

**Demos:**

- Porosity Tubes

**Variations:**

**Text Sections:** Ch 14, 15

**SOL's:** 1c,e; 2a-e; 3a,b,d; 4b,d; 8b; 9all; 11a

**Week 9–**

**Topics:**

- Wind & waves
- Shoreline features
- Benchmark
- Review as needed
- Begin week 10 early if time permits

**Lab:**

**Demos:**

**Variations:**

**Text Sections:** Ch 16

**SOL's:** 3b,c; 7c; 8a,b; 13d

**Westmoreland County Public Schools  
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**Week 10–**

**Topics:**

- Moon's origin & properties
- Moon's motion & phases
- Lunar eclipse
- Sun's structure
- Sun's size
- Sun's function & heat
- Solar eclipse

**Lab:**

- Lunar phases (Handout)

**Demos:**

- Lunar & solar eclipses with models

**Variations:**

- Parallax (Handout)

**Text Sections:** Ch 25, 26

**SOL's:** 4b,c,d; 12c; 14b

**Week 11–**

**Topics:**

- Nebular hypothesis
- Inner Planets
- Outer Planets
- Planetary satellites
- Solar system debris
- Light
- Characteristics of stars
- Life cycles of stars
- Galaxies and the universe
- Big Bang Theory

**Lab:**

- Scale of the Solar system on football field (Handout)
- Scale of the Solar system on 1 yd paper (Handout)

**Demos:**

- EMR demo with gradients

**Variations:**

- Expansion of the universe, p636
- Star cycle picture order activity
- Build a spectroscope

**Text Sections:** Ch 27, 28

**SOL's:** 4a,c,d; 12c; 14a-e

**Week 12–**

**Topics:**

- Fossils
- Relative time
- Absolute time
- Geologic time scale
- Precambrian & Paleozoic
- Mesozoic
- Earth's recent history
- Virginia's provinces

**Lab:**

- Time line lab (Handout)
- Fossil molds & casts lab (Handout)

**Demos:**

**Variations:**

- Half-life of pennies (from Chem text)

**Text Sections:** Ch 29, 30

**SOL's:** 2b,e; 4c; 6b; 10a-d; 12a,b

**Westmoreland County Public Schools**  
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**Week 13–**

**Topics:**

- Atmosphere in balance
- Layers of the atmosphere
- Heat & the atmosphere
- Local temperature variation
- Human impact on the atmosphere
- Humidity & condensation
- Clouds
- Precipitation

**Text Sections:** Ch 17, 18

**SOL's:** 3b; 4b,c; 11c; 12a,b,d,e; 13a-c

**Lab:**

- Absorption and radiation of heat, p384
- Insolation lab (Handout)
- Condensation lab (ES lab manual)
- Psychrometer lab (ES lab manual)

**Demos:**

- Styrofoam peanuts in gallon milk jugs

**Variations:**

- Let's make frost (NSTA)

**Week 14–**

**Topics:**

- Air pressure & wind
- Factors affecting wind
- Global wind patterns
- Continental & local winds
- Weather
- Air masses
- Fronts
- Types of storms
- Forecasting
- Station models

**Text Sections:** Ch 19, 20

**SOL's:** 1c; 2a,b,c,d,f; 3 all; 4b,d; 8b; 9d; 11a,c; 12d; 13 all

**Lab:**

- Make a Barometer (ES lab manual)
- Real time isobars & fronts

**Demos:**

**Variations:**

- Predict the weather from current isobars
- Severe Storms, p460
- Tracking Hurricane Andrew (NSTA)
- Hail in a Test Tube (NSTA)

**Week 15–**

**Topics:**

- What is climate?
- Climate zones
- Climate change
- Oceanography
- Properties of water
- Properties of ocean water
- Ocean life

**Text Sections:** Ch 16, 22

**SOL's:** 3b,c; 7c; 8a,b; 11a-c; 13d

**Lab:**

- Sunny Rays & Angles Lab (ES lab manual)
- Density lab (Ward's handout)
- A Pile of Water (NSTA)

**Demos:**

**Variations:**

- Won't You BB My Hydrometer (NSTA)

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**Week 16–**

**Topics:**

- Studying the ocean floor
- Continental margin
- Ocean basin
- Ocean floor sediments
- Surface currents
- Currents under the surface
- Tides

**Text Sections:** Ch 23, 24

**SOL's:** 6b; 8b,c; 11a-d

**Lab:**

**Demos:**

**Variations:**

- Plotting Tidal Curves (NSTA)

**Week 17–**

**Topics:**

- Semester review
- SOL test

**Text Sections:** All

**SOL's:** All

**Lab:**

**Demos:**

**Variations:**

**Week 18–**

**Topics:**

- SOL expedited retakes

**Text Sections:**

**SOL's:**

**Lab:**

**Demos:**

**Variations:**