

## Course Outline Earth Science

Module and Topic	Name	2010 Virginia Standards of Learning
<b>Developmental Module:</b> <i>The purpose of this module is to review skills that students need in order to be successful in other areas of the course.</i>		
<b>Module 1: What is Earth Science?</b>		
Topic 1	The Branches of Earth Science	ES.2 a
Topic 2	Scientific Investigation	ES.1 a, b, c, e, f ES.2 a, b, c, d
Topic 3	Measurement	ES.1 a, b, c, e, f ES.2 b, c
<b>Module 2: Mapping</b>		
Topic 1	Mapping the World	ES.1 a, c, d
Topic 2	Analyzing Maps	ES.1 c, d
Topic 3	Topographic Maps	ES.1 a, c, d, f
Topic 4	Satellite Imagery and the Global Positioning System	ES.1 b, c, f
<b>Module 3: Astronomy – The Universe</b>		
Topic 1	Cosmology	ES.2 d ES.13 a, b
Topic 2	Galaxies and the Milky Way	ES.2 d ES.13 b
Topic 3	Stellar Evolution and Classification	ES.13 b
Topic 4	The Electromagnetic Spectrum and the Doppler Effect	ES.2 d ES.13 b
Topic 5	Telescopes and Other Tools	ES.1 b, f ES.3 d
Topic 6	Early Astronomers	ES.3 d
Topic 7	Modern Astronomy	ES. 1 b, f ES.3 d ES.13 b
<b>Module 4: Astronomy – The Solar System</b>		
Topic 1	The Formation of the Solar System	ES.2 b, d ES.3 a, c ES.13 a, b
Topic 2	The Sun	ES.1 e ES.2 b, c ES.3 a, c ES.13 b
Topic 3	The Terrestrial Planets	ES.1 c ES.3 a, c
Topic 4	The Jovian Planets	ES.1 c ES.3 c
Topic 5	Other Objects in the Solar System	ES.3 c

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Topic 6	Earth's Moon and Lunar Phases	ES.1 b, e, f ES.2 b, c ES.3 a, b, c
Topic 7	Sun, Earth, and Moon Systems	ES.3 a, b, c
<b>Module 5: Minerals</b>		
Topic 1	Matter	ES.4 a, b PS.2 b, c, d, e, f
Topic 2	Minerals	ES.4 a, b
Topic 3	Identification of Minerals	ES.1 b, c, f ES.2 b, c ES.4 a, b
<b>Module 6: Rocks</b>		
Topic 1	Igneous Rocks	ES.1 b, c, f ES.2 a, c ES.4 a, b ES.5 a
Topic 2	Sedimentary Rocks	ES.1 b, c, f ES.2 a, c ES.5 b
Topic 3	Metamorphic Rocks	ES.1 b, c, f ES.2 a, c ES.5 c
Topic 4	The Rock Cycle	ES.1 c ES.5 a, b, c
<b>Module 7: Plate Tectonics and Earth's Structure</b>		
Topic 1	Earth's Structure	ES.1 c ES.2 a ES.7 a, b
Topic 2	Plate Tectonics	ES.1 a, b, c, e, f ES.2 a, b, c, d ES.7 a, b
Topic 3	Volcanoes	ES.1 a, c, e ES.8 a ES.7 a, b
Topic 4	Earthquakes	ES.1 c ES.2 a ES.7 a, b
<b>Module 8: Weathering, Erosion, and Groundwater</b>		
Topic 1	Weathering	ES.1 a, c, e ES.2 b, c, d ES.8 a
Topic 2	Karst Topography	ES.1 c ES.8 b
Topic 3	Soils	ES.1 c ES.8 a

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Topic 4	Erosion and Deposition	ES.1 c, e, f ES.2 b, c ES.8 a, b
Topic 5	Surface Water	ES.1 c ES.8 d, e
Topic 6	Groundwater	ES.8 c, d, e
<b>Module 9: Earth's History</b>		
Topic 1	Relative Dating	ES.1 c ES.2 d ES.9 a, b, c
Topic 2	Radiometric Dating	ES.1 b, c, e, f ES.2 b, c, d ES.9 a, b, c
Topic 3	Geologic Time	ES.1 c ES.2 d ES. 11 d ES.9 a, b, d
Topic 4	Fossils	ES.2 d ES.9 a, b, d
<b>Module 10: Resources and Virginia Geology</b>		
Topic 1	Renewable and Nonrenewable Resources	ES.6 a, b, c, d
Topic 2	Fossil Fuel Energy Resources	ES. 1 c ES.6 a, b, c, d
Topic 3	Alternative Energy Resources	ES.6 a, b, c, d
Topic 4	Virginia Geology and Resources	ES.1 c ES.6 a, b, c, d ES.7 a
Topic 5	Virginia Watersheds and the Chesapeake Bay	ES.8 e, f ES.10 e
<b>Module 11: Meteorology</b>		
Topic 1	Earth's Atmosphere	ES.1 c ES.2 a ES.11 a, b, c, d ES.12 d
Topic 2	Clouds and Precipitation	ES.1 b, c, e, f ES.2 b, c ES.12 a, b, d
Topic 3	Weather and Climate	ES. 1 c, d ES.2 a ES.11 c, d, ES.12 a, b, c, d
Topic 4	Weather Observations	ES.1 a, b, c, e, f ES. 2 b, c ES.12 a, b, c, d

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Topic 5	Interpreting Weather Maps	ES.1 a, b, c, d ES.12 a, b
Topic 6	Severe Weather	ES. 1 c, d ES.2 a ES.12 a, b, c, d
Topic 7	Changes in the Atmosphere	ES.1 a, b, c, e, f ES.2 a, b, c ES. 10 c ES.11 d ES.12 d
<b>Module 12: Oceanography</b>		
Topic 1	The Blue Planet	ES.1 c ES.2 a ES. 11 d ES.10 c
Topic 2	Ocean Movement - Waves and Tides	ES.1 c ES.10 a, c
Topic 3	Salinity and Ocean Circulation	ES.1 b, c, e, f ES.2 b, c ES.10 a, b, c
Topic 4	Ocean Geomorphology	ES. 1 c ES.10 b, c, d
Topic 5	Ocean Life	ES.10 a, c
Topic 6	Environmental, Economic, and Public Policy and the Oceans	ES.1 c, e, f ES. 2 b, c ES.10 c, e