

Lenoir County Public Schools
Curriculum Pacing Guide
2005-2006

Subject: Earth/Environmental Science HONORS **Grade Level:** 9

Time (approx teaching days)	Major Concepts	Objective / Pacing	Text / Support Materials
1	Overview of Pros/Cons of World Issues of E. Science Chapter 1: Introduction to E.S. Branches of E.S., Intro into Careers in E. Science H: Class debate on Issues	1.01: Chapter 1	*List of World Issues...deforestation, use of fossil fuels, etc... *H: Journal articles relaying global E. Science problems
2	Careers in E. Science—Have students research Careers in Earth Science for Power Point presentation to the class	Science in Personal and Social Perspectives Strand	*Library/Computer Lab
3	Careers in E. Science—Continue research H: Research Satellite Imagery for Discussion on Uses of the Technology	Science in Personal and Social Perspectives Strand	*Library/Computer Lab
4	Nebular hypothesis, Earth's spheres, Intro to Plate Tectonics, Determining locations with latitude & longitude	1.01, 2.02, 2.05, 4.04	*Swirling Matter demo: need water, bucket, vermiculite *Prefix chart *Map projection kit/maps
5	Latitude & Longitude (cont) H: Students will develop their own maps for analysis.	2.05	*Coordinate lists and maps, graph paper

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6	Map Projections and Topographic Maps H: Students will develop their own maps for analysis.	2.05	*Map projections and topographic maps
7	Models of Topographic Maps—analysis of the maps from 2D and 3D representations	2.05	*Worksheets and various materials used for constructing the maps
8	Scientific Method H: Students will create and design their own experiments (with E. Science. themes)	1.02	*Show examples of phenomena & have students interpret the results and processes
9	TEST: Chapter 1	Assess	
10	Ancient Astronomers (and Modern), Motions of Earth/Sun, Motions of Moon/Earth	6.02: Chapter 22	

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11	Solar System: Formation of Planets and Moons—Planet Projects (scale sized models, planetary brochures, etc...)	6.01: Chapter 23	*Library, computer lab, book, paper (bulletin board or poster board)
12	Solar System: Formation of Planets and Moons—Planet Projects (scale sized models, planetary brochures, etc...)	6.01	*Library, computer lab, book, paper (bulletin board or poster board)
13	Solar System Info: Terrestrial Planets v. Jovian Planets; Extraneous Space Features: comets, asteroids & meteorites	6.01	H: Students must identify a place in the solar system that has potential for life and then infer what would have to happen for life to flourish.
14	The Sun: Our light source; Space technology—cameras & telescopes; the Doppler effect and theory of ever-expanding universe; Nuclear fusion: the source of the Sun's power	6.02, 6.03, 6.04, 6.05: Chapter 24	
15	Stellar evolution and H-R Diagrams; The Expanding Universe & Hubble's Law, the Big Bang theory	6.03: Chapter 25	*H-R Diagrams p.704 in text, human H-R

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16	Deep Impact or Apollo 13		H: Paper on Technology used in Deep Impact/Apollo 13.
17	Review & Test on Chapters 22-25.	Assess	
18	Matter: Inside the Atom, Ionic & Covalent Bonds, and Isotopes	2.01: Chapter 2	*Periodic table
19	Earth Chemistry	2.01	H: Lab Report on Reactions with Oxygen
20	Minerals: characteristics, how they form, different groups, properties used for identification	2.01	*Mineral boxes H: Making a Dichotomous Key for Classifying Minerals

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21	Luster & Streak	2.01	*Mineral boxes
22	Cleavage/Fracture & Hardness	2.01	*Mineral boxes
23	Crystal Structure	2.01	*Lab Manual
24	Chapter 2 Test	Assess	
25	Rock Cycle: types of rocks; analysis of igneous, sedimentary, & metamorphic rocks	2.03: Chapter 3	*Rock kits H: Crayon rock cycle—students must use available resources to create example of rock cycle

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26	Lab with Igneous Rocks	2.03	*Rock kits
27	Lab with Sedimentary Rocks	2.03	*Rock kits
28	Lab with Metamorphic Rocks	2.03	*Rock kits
29	Test on Chapter 3	Assess	
30	Earth's Mineral Resources: Renewable v. Non., Fossil Fuels, Formation of Deposits, Nonmetallic Dep., Alternative Energy Sources	1.01, 1.02, 1.05, 1.06, 2.06, 2.07, 4.01, 5.03: Chapter 4	*NC Resources List H: Research new, cleaner, fuel-efficient modes of transportation for discussion

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31	Water as a Resource	2.06, 2.07, 4.01, 4.04, 4.05	*What do we use that are made from mineral resources? *Video: Nat'l Geographic Water as Resource or Troubled Waters (UNCW)
32	Conservation of Resources H: Creation of a town: students will be required to build their own town (in groups) that should be designed in order to promote the “best” use of resources with the least negative affect on the environment.	1.01, 1.06, 2.06, 2.07	*Poster materials for “conservation art” Perhaps bring in “trash” to use for conservation art.
33	Test on Chapter 4	Assess	
34	Geologic Time: The Rock Record: Laws of Uniformitarianism, Superposition, Original Horizontality, Cross-cutting relationships; Finding fossils in the rock layers	3.01: Chapter 12	*Rock layers to “date” using the laws of the rock record
35	Radioactivity and Half-lives; Dating with Carbon-14	3.01	*Half-life demonstrations (box, colored disks)

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36	Geologic Time: The Eras of Time: Description of each of the 4 eras and the periods of the Paleozoic and Mesozoic; NC Geologic History	3.01, 3.02: Chapter 13	H: Create a picture of NC millions of years ago based of fossil records.
37	Creating the Geologic Time Scale	3.01	*Paper (bulletin board or adding tape)
38	Chapters 12 & 13 Test	Assess	
39	Continental Drift & Pangaea (Wegener),	2.02, 2.03: Chapter 9	*Plate Tectonics cd *Cutting out Pangaea & putting it together
40	Plate Boundaries (types)	2.02	

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41	Evidence for Plate Tectonics and Convection	2.02	H: Using Given Materials (ice, food coloring, water, hot plate, thermometers)
42	Deformation, Types of Stress, Folds, Faults, Types of Mountains, Isostatic Adjustment	2.02, 2.03: Chapter 11	*Marshmallow Lab for Stress
43	Chapter 9 & 11	Assess	
44	Review	Review	
45	Review	Review	

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46	Midterm: 9 weeks test	Midterm	
47	Earthquakes	2.04: Chapter 8	*Video: Raging Planet, Discovery, Nova EQ H: Trapped in an EQ—Entries from a Survivor writing assignment
48	Earthquakes: Parts of an EQ, Causes of Earthquakes, Elastic Rebound Theory, Measuring Earthquakes	2.04	*Various Worksheets
49	Measuring Earthquakes: Richter v. Mercalli, Tsunamis, Predicting EQ, Layers of the Earth	2.04	*Scales
50	Earthquakes: video	2.04	*Aftershock or The Core H: Paper discussing the facts versus fiction portrayed in the films

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51	Volcanoes: Factors affecting eruptions, Lava flows & pyroclastic materials, Types of Volcanoes	2.03: Chapter 10	
52	Other Volcanic Characteristics: Landforms, Magma, Plate Tectonics & Igneous Activity	2.03	H: Research on famous volcanic areas—identify the differences in eruptions and the effects of the eruptions based on location
53	Volcano Labs	2.03	*Paper machè (newspaper, flour, water)
54	Dante's Peak or Volcano		H: Evaluate the usefulness of this video in teaching people about volcanoes.
55	Test on Chapters 8 & 10	Assess	

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56	Mechanical v. Chemical Weathering, Rates of Weathering	2.03: Chapter 5	*Weathering Lab
57	Soil formation, Soil Profiles, Soil Types and Soil Erosion	2.03, 2.05, 2.06	*Soil Testing Materials H: Agricultural Speaker about the Importance of Soils
58	Mass Movements	2.03, 4.01	*Raging Planet Avalanche
59	Chapter 5 Test	Assess	
60	Water Cycle & Water Budget, Gradient, Discharge and Channel Erosion	4.01, 4.04	*Water Cycle Chart H: Create poster showing the water cycle in Lenoir Co.

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61	Stream Deposition, Floods and Control, Springs, Groundwater, Karst Topography	4.01, 4.04, 4.05: Chapter 6	
62	Test on Chapter 6	Assess	
63	Glaciers, Deserts, Wind Erosion, Water Erosion, Ice Ages	4.01, 4.02, 4.03, 4.04, 5.03: Chapters 7 and 16.3	
64	Lab Day: Designing Features of Erosion	4.01, 4.02, 4.03, 4.04, 5.03:	*flour, salt, paint, water
65	Chapters 7 & 16.3	Assess	

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66	Oceans: The Ocean Floor (mapping) and Sonar, Underwater Research Vessels, Ocean Resources	2.02, 2.03, 2.07, 4.01: Chapter 14	H: Charting a food web of ocean resources—Inferring the consequences of a lack of these resources to the food chain & Human population
67	Sonar Lab—graphing with coordinates; Ocean Life	4.02, 4.04: Chapter 15	
68	Video on Ocean Life		
69	Using Sonar to discover “buried treasure”--Titanic		*Titanic Video H: Judging science v. ethics: Raising the Titanic for research or leaving it alone as a tomb
70	Ocean Circulation, Currents and Upwelling, Waves & Tides	4.02, 4.03, 4.05: Chapter 16	*Graphing Tidal Cycles

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71	Chapters 14-16 Test	Assess	
72	<u>Day After Tomorrow</u> video	1.01, 1.03, 1.05, 1.06, 5.01, 5.02, 5.03: Chapter 17	*Video—discussion of causes of global warming
73	The Atmosphere: Components, Pressure v. Altitude, Tilt & Seasons, Daylength, Energy Transfers in the Atmosphere (Greenhouse Effect); Variations in Temperature	4.02, 5.02, 5.03	*Greenhouse lab
74	Greenhouse Effect (cont.)	5.03	H: Compare the G-house effect experienced on Earth to that on Venus. Hypothesize as to what factors cause the effect to be different in the two places.
75	Water in the Atmosphere, Humidity, Air Compression/Expansion, Clouds, Types of Precipitation.	5.01, 5.02, 5.03 Chapter 18	*Cloud in a bottle

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76	Air pressure, Global Wind Patters (and local), Coriolis effect, High and Low Pressure Systems p.549: Tracking El Niño from Space—Satellite images	5.01, 5.02, 5.03 Chapter 19	*Making Hail *Maps of Pressure systems
77	Air masses, Fronts, Severe Weather, Tracking Severe Weather	5.01, 5.02: Chapter 20	*Hurricane Tracking Charts H: Hypothesize why some areas of the U.S. such as Tornado alley, and eastern NC have these severe storms more often than others.
78	Creating Homemade Weather Instruments		
79	Weather Videos	5.01, 5.02	*Raging Planet series, Night of the Twister, Eyewitness Video
80	Weather Videos (cont)	5.01, 5.02	

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81	Factors that Affect Climate	5.01, 5.02, 5.03 Chapter 21	H: Apply knowledge of air masses and fronts along with latitude to describe why certain areas of the globe experience certain climates.
82	Climate Systems	5.01, 5.02, 5.03	*Biomes Videos
83	Climate Systems	5.01, 5.02, 5.03	
84	Comprehensive Project	All are addressed	After choosing a specific location on the globe, students must apply principles learned throughout the year to analyze certain characteristics responsible for making the location what it is (ex: climate, seismic activity, landforms, location, etc...)

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85	Comprehensive Project/Review	All are addressed	
86	Comprehensive Project/Review	All are addressed	
87	Review		
88	Review		
89	Review		

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90	Final Exam		

ADDITIONAL NOTES:

As opposed to the regular Earth/Environmental sections of the course, which received mostly multiple-choice tests, HONORS sections' tests will primarily open-ended to allow for thoughtful, student responses rather than random guessing.

Also, throughout the course of the semester, in Honors sections, instructors may provide outside readings for discussion, clarification, or analysis to be done by the students. This is done for two reasons: to make students aware that scientific discoveries are constantly occurring and to show students that science exists beyond their textbooks.