**PACING GUIDE**

**COURSE:** Environmental Science **GRADE(S): 9**

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| **MONTH** | **UNIT** | **STANDARDS/SKILLS** | **ASSESSMENTS**  What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered? | **CONTENT**  Topics being covered? What do students need to know? (*nouns*) | **ACTIVITIES**  w/Integration of Technology & Career Ready Practices |
| September | Introduction to Env. Sci. | |  |  | | --- | --- | | -SCI.HS-PS1-1 | Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. | | -SCI.HS-PS2-6 | SCI.HS-PS2-6 | | Summative:   * Activity Sht. Self-Identifying the Characteristics of a scientist. * Lab report phases of matter * Lab report sci. process * Lab report measurement lab * Quiz 1 Unit 1- basic atomic structure and metric meas. * Test of basic atomic structure, phases of mater, the sci. process, and basic metric meas. * M.P. Exam * Measurement CB * Sci. Process CB   Formative   * Atom Worksheet * Periodic Table worksheet * Metric worksheet * Sci. Process worksheet | * The Diversity of Scientists * The basic structure of an atom * Basics of matter * The steps of the Scientific Process * Converting mm into cm and the reverse | Tech:  Measurement CB  Scientific Process CB  CRP:  Matter Lab  Sci. Process Lab- Pendulum  Measurement Lab |
| September/October | Geosphere Part I | -SCI. 9-12 HS-ESS1  -SCI. 9-12 HS-ESS2 | Summative:   * Lab report Cooking Mining * Lab Index Fossil * Lab Soil * Erosion Lab * Specific Gravity Labs * Fault Model Lab * EQ building Lab * Quiz 1 Unit 2- structure of the earth, basic stratigraphy * Test 2- struct. of the earth, composition of the earth, stratigraphy, faulting, and radiative/relative dating * M.P. Exam   Formative:   * Internal Structure of the Earth scale drawing * Subsurface Changes worksheet * Structure of the Earth CB * Faults/Folds act. Sht. * Faults diagram * Fun w/Stratigraphy act. Sht. * Rock Cycle work sheet * Soil Profile Act. * P- cycle Act. Sht. * Ecological Footprint * Rock Cycle CB | * Structure and Dynamics of the Earth * Geosphere comp. of the Earth * Stratigraphy * Faulting * Radioacitve Dating | Tech:  Structure of the Earth CB  Rock Cycle CB  CRP:  Index Fossil Lab  Soil Lab  Erosion Lab  Specific Gravity Lab  Fault model lab  EQ Building Lab |
| October/November | Geosphere Part II | SCI. 9-12 HS-ESS1  -SCI. 9-12 HS-ESS2 | Summative:   * Lab report Magentic Reversal CB * Lab Plate Boundary * Specific Gravity Labs * EQ building Lab * Quiz 1 Unit 3- Plate tectonics * Test Unit 3-Plate tectonics, eq., vol., surface feature formations * M.P. Exam   Formative:   * Paleomagnetism act. * Soil Profile Act. * P- cycle Act. Sht. * Ecological Footprint * Rate of Oceanfloor Spreading | * Plate tectonics * Paleomagnetism * Earthquakes * Volcanoes * Surface Features formations | Tech:  Magnetic Reversal CB  CRP:  Plate Boundary Lab  Specific Gravity Lab  EQ Building Lab |
| November/December | Hydrosphere- Freshwater | SCI. 9-12 ESS1  SCI. 9-12 ESS2  SCI 9-12 ESS3 | Summative:   * Build and design a water filter * Porosity Lab * Watershed Surface Lab * Quiz 1 Unit 4- water cycle, suface and groundwater * Test Unit 4-Water Cycle; surface and underground water, water management; water pollution * M.P. Exam * Delaware River CB   Formative:   * Aquifer act. Sheet * Delaware River Act. Sheet * Water Ecofootprint * Point/Nonpoint pollution activity sht. * River Puzzle * Water Budget Graph * Evap./Precip. Graph * Desalination Lab * Water Cycle Act. | * Hydrosphere * Water cycle * Freshwater * Groundwater * Water Use/Management * Water Pollution | Tech:  Delaware River CB  CRB:  Desalination Lab  Porosity Lab  Build and Design a Water Filter |
| December/January | Hydrosphere Oceans | SCI. 9-12 ESS1  SCI. 9-12 ESS2  SCI 9-12 ESS3 | Summative:   * Density Current Lab * Hydrothermal Vent Lab * Ocean Currents Lab * Sea Level Rising Lab * Oceanfloor Characteristics CB * Quiz 1 Unit 5- Phys. Charac. Of Oceans * Test Unit 5: Water Pollution, phys. Charc. Of oceans, ocean temp. regulation, ocean currents, ocean threats, food chains. * M.P. Exam   Formative:   * Aquifer act. Sheet * Delaware River Act. Sheet * Water Ecofootprint * Point/Nonpoint pollution activity sht. * River Puzzle * Water Budget Graph * Depth/Temp. Graph * Evap./Precip. GraphOcean Foodweb | * Water Pollution * Physical Characteristics of Oceans * Oceans as Temp. Regulators * Ocean Currents * Threats to the Ocean   - Food Chains  and Energy  Transport | Tech:  Oceanfloor Characteristics CB  CRP:  Density Current Lab  Hydrothermal Vent Lab  Ocean Current Lab  Sea Level Rising Lab |
| February/March | Atmosphere | SCI 9-12 ESS2  SCI 9-12 ESS3 | Summative:   * Ozone Lab * Graphing Layers of the Atmosphere * Quantitative C- Cycle Activity * Atmosphere Time Line Activity * Energy Budget Activity   Formative:   * N- Cycle Act. Sht. * Heat Transfer * C/O Cycles Act. * Atmosphere CB * Quiz 1 Unit 6- Comp. of atmos.; Hist. of Atmos. * Test Unit 6- Comp. of atmos; history of atmos.; C, O, N- cycles, air pressure, Atmos, layers, Ozone, energy transfer and budget * M.P. Exam | * Composition of the Atmosphere * Developmental Hist. of the atmos. * C/O Cycle * N- Cycle * Air Pressure * Layers and Characteristics of the Atmos. * Ozone * Energy Transfer in the Atmos. * Energy Budget | Tech:  Atmosphere CB  CRP:  Ozone Lab  Atmospheric Time Line Act. |
| March/April | Climate | SCI 9-12 ESS2  SCI 9-12 ESS3 | Summative:   * Seasons Lab * Particulate Matter * Acid Rain Lab * Tree Ring Lab * Milankovitch Cycle CB * Global Air Pollution Act. * Air Pollution Lab CB * Unit 7 Quiz 1: Climate factors * Unit 7 Test: Climate factors, Evidence of Global Warming, and air pollution * M.P. Exam   Formative:   * Rain Shadow act. * N.J. Climate Change * Lat./Altitude Act. * Graphing Climate of 3 cities * Concentration of GH Gases * Convection/Coriolis Act. Sht. * Factors that influence climate act. Sht. * Ice Core Act. | * Climate Definition * Climate Factors * Evidence of Global Warming * Air Pollution | Tech:  Milankovitch Cycle CB  Air Pollution CB  CRP 11  Seasons Lab  Acid Rain Lab  Tree Ring Lab |
| April/May/June | Universe/ Solar System | SCI 9-12 ESS1  SCI 9-12 ESS2 | Summative:   * Asteroid Lab * Expanding Universe Lab * Elliptical Orbit Lab * Number of Stars Lab * Spectral Lines Lab * Elements From Stars CB * Birth of S,S, CB * Quiz 1 Unit 8: Big Bang Evidence; History of the Heliocentric/Geocentric theory and the scientists * Unit 8 Test: BBT, Helio./Geo. Theory; Electromagnetic spectrum; Doppler, Red/Blue Shift, Star formation, Element formation, Solar System formation * M.P. Exam   Formative:   * Electromagnetic CB * Big Bang Misconceptions Act. * Doppler CB * HR Diagram w/ CB and activity sheet * Formation of the Solar Sys. Act. * Hubble’s Law Graph * Red/Blue Shift Act. * Steller Evol. Act. | * Big Bang Theory Evidence * Heliocentric vs. Geocentric Theory * Electromagnetic Spectrum * Doppler Effect * Red/Blue Shift * Star Formation * Element Formation * Solar System Formation | Tech:  Elements From Stars CB  Birth of S.S. CB  Electromagnetic CB  Doppler CB  CRP:  Asteroid Lab  Expanding Universe Lab  Number of Stars Lab |