**PACING GUIDE**

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 CBScientific Process CBCRP:Matter LabSci. Process Lab- PendulumMeasurement 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 CBRock Cycle CBCRP:Index Fossil LabSoil LabErosion LabSpecific Gravity LabFault model labEQ 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 CBCRP:Plate Boundary LabSpecific Gravity LabEQ Building Lab |
| November/December | Hydrosphere- Freshwater | SCI. 9-12 ESS1SCI. 9-12 ESS2SCI 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 CBCRB:Desalination LabPorosity LabBuild and Design a Water Filter |
| December/January | Hydrosphere Oceans | SCI. 9-12 ESS1SCI. 9-12 ESS2SCI 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 CBCRP:Density Current LabHydrothermal Vent LabOcean Current LabSea Level Rising Lab |
| February/March | Atmosphere | SCI 9-12 ESS2SCI 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 CBCRP:Ozone LabAtmospheric Time Line Act. |
| March/April | Climate | SCI 9-12 ESS2SCI 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 CBAir Pollution CBCRP 11Seasons LabAcid Rain LabTree Ring Lab |
| April/May/June | Universe/ Solar System | SCI 9-12 ESS1SCI 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 CBBirth of S.S. CBElectromagnetic CBDoppler CBCRP:Asteroid LabExpanding Universe LabNumber of Stars Lab |