2019 Unit 4 Atmosphere

Content Area: **Science**
Course(s): **Environmental Science**
Time Period: **January**
Length: **30**
Status: **Published**

Enduring Understandings:

- Changes in the atmosphere due to human activity have increased carbon dioxide concentrations and thus affect climate.
- Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes.
- Feedback (negative or positive) can stabilize or destabilize a system.
- Gradual atmospheric changes were due to plants and other organisms that captured carbon dioxide and released oxygen.

Essential Questions:

- How does carbon cycle among the hydrosphere, atmosphere, geosphere, and biosphere?
- How has the atmosphere changed over time?

Lesson Titles:

- Air Pressure
- Carbon/Oxygen Cycle
- Composition of the Atmosphere
- Developmental History of the Atmosphere
- Energy Budget
- Energy Transfer in the Atmosphere
- Layers/Characteristics of the Atmosphere
- Ozone
- The Nitrogen Cycle

Career Readiness, Life Literacies & Key Skills

WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

Inter-Disciplinary Connections:

LA.RL.9-10.1	Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferentially, including determining where the text leaves matters uncertain.
MA.A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.
LA.RL.9-10.2	Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details and provide an objective summary of the text.
LA.RL.9-10.4	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).
LA.RH.9-10.6	Compare the point of view of two or more authors in regards to how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
LA.RH.9-10.9	Compare and contrast treatments of the same topic, or of various perspectives, in several primary and secondary sources; analyze how they relate in terms of themes and significant historical concepts.
MA.A-REI.A	Understand solving equations as a process of reasoning and explain the reasoning
MA.A-REI.D.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
SOC.9-12.1.1.2	Analyze how change occurs through time due to shifting values and beliefs as well as technological advancements and changes in the political and economic landscape.
SOC.9-12.1.3.1	Distinguish valid arguments from false arguments when interpreting current and historical events.
SOC.9-12.1.3.2	Evaluate sources for validity and credibility and to detect propaganda, censorship, and bias.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

- Atmosphere Chromebook Act.
- Carbon/Oxygen Activity
- Energy Budget Activity Sheet
- Graphing Layers of the Atmosphere
- Heat Transfer Activity
- Heat Transfer Chromebook Act.
- History of the Atmosphere Timeline Activity
- Nitrogen Cycle Activity Sheet
- Ozone Act. Sht.
- Ozone Graphing Activity
- Ozone Lab
- Quantitative Carbon Cycle Act. Sht.

- Read/Answer Questions to Current Event

Modifications

Benchmark Assessments

Skills-based assessment

Reading response

Writing prompt

Lab practical

Formative Assessment:

- Analyze geoscience data using tools, technologies, and/or models (e.g., computational, mathematical) to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.
- Anticipatory Set
- Closure
- Develop a model based on evidence to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.
- Develop a model based on evidence to illustrate the biogeochemical cycles that include the cycling of carbon through the ocean, atmosphere, soil, and biosphere, providing the foundation for living organisms.
- Lab Report
- Warm-Up

Summative Assessment:

- Alternate Assessment
- Lab Practical
- Marking Period Assessment
- Unit 4 Exam on Layers of Atmosphere, Cycles, Ozone, Energy Transfer

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Resources & Materials:

- "Why is there air" Discovery News: https://www.youtube.com/watch?v=ocsV1cA4K4A
- Baking Soda and Vinegar
- History of the Atmosphere Text https://drive.google.com/open?id=1lMHA_-JA6J86kITp7X4Xqu_QpO4vx8EMFG8zUbcvqNc
- How the Ozone Breaks down: https://www.youtube.com/watch?v=k2kpz_8ntJY
- Index Cards
- marshmellows
- Timeline material: masking tape, adding machine tape
- toothpicks
- Vaseline
- Website: Newsela.com