Course Overview

Content Area: **Science**
Course(s): **Earth and Environmental Science**
Time Period: **Year**
Length: **180**
Status: **Published**

Course Overview

Aligned to Standards: NJSLS 2020

Revision Date: 2024

In compliance with the NJ Student Learning Standards, climate change, career readiness, DEI (Diversity, Equity, & Inclusivity), as well as other standards have been integrated within the NBCRSD curricula (NJ Administrative Code Title 6A: chapter 8; Title 18A: chapter 35).

Course Overview

Sequence- Unit Titles, Summaries, and Number of weeks per unit (total = 18 semester/36 year)

- **Unit 1: Scientific Foundations - 2-3 weeks**
  - In this unit students learn essential skills in experimental design and measurement techniques. They delve into constructing hypotheses, designing controlled experiments, and using precise instruments to gather and analyze data. Through hands-on projects, they develop critical thinking and problem-solving abilities essential for future scientific inquiry.
- **Unit 2: Formation of the Universe and Earth - 3-4 Weeks**
  - This unit focuses on the structure and development of the Earth and its environment over time. This includes the formation of the universe and Earth's place in space. Knowing about our cosmic origins helps us understand how we came to be as well as how we might impact the universe now and in the future. This “big picture” thinking has led to many important discoveries and a greater understanding of how the universe works, including our tiny corner of it.
- **Unit 3: Earth's Systems (Biogeochemical Cycles) - 3-4 weeks**
  - In this unit on biogeochemical cycles and Earth systems, students explore the interconnected processes that regulate the flow of elements and compounds through ecosystems. They investigate how cycles such as the carbon, nitrogen, and water cycles interact with geological processes, climate patterns, and human activities, gaining a comprehensive understanding of Earth's dynamic environmental systems and their global implications. Through hands-on experiments and data analysis, students develop insights into the complex relationships between organisms, the atmosphere, hydrosphere, lithosphere, and biosphere.
- **Unit 4: Earth's Resources - 4-5 Weeks**
  - Earth's resources (minerals, rocks, soil, and water) are the naturally occurring materials found on Earth that constitute the raw materials upon which our global society exists. This unit focuses on Earth's materials which are vital resources that provide the basic components for life, agriculture and industry.
- **Unit 5: Global Climate Change - 3-4 Weeks**
  - In a unit on global climate change, students delve into the scientific evidence behind rising temperatures, explore the causes such as human-induced greenhouse gas emissions, and analyze the profound impacts on ecosystems, weather patterns, and societies worldwide. The unit underscores the critical need for proactive mitigation strategies and adaptive responses to confront the complex challenges posed by climate change, ensuring a sustainable future for all.
- **Unit 6: Population Ecology - 4-5 Weeks**

- This unit focuses on exploring the dynamics of species populations within ecosystems, examining factors such as birth rates, death rates, immigration, and emigration. It delves into how these factors interact with environmental conditions to influence population growth, decline, and stability, offering insights into ecological balance and the impacts of human activities on biodiversity. The unit often emphasizes the importance of conservation efforts and sustainable management practices to maintain healthy populations and ecosystem resilience.

- **Unit 7: Land and Soil - 3-4 Weeks**
  - Unit 7 covers principles of soil science, sustainable agricultural practices, and the impact of land use on ecosystems. Students explore techniques for soil conservation, including erosion control and nutrient management, while considering the importance of preserving soil health for future food security and environmental sustainability. The unit emphasizes the role of responsible land stewardship in mitigating climate change and promoting equitable access to productive land resources globally.
- **Unit 8: Water - 4-5 Weeks**
  - Water education is important to understand the problems of quantity, quality, and availability of water on our planet. By learning about the importance of water, students can become advocates for saving water, reducing water pollution, and preserving natural habitats for aquatic life in their communities.
- **Unit 9: Atmosphere and Air - 4-5 Weeks**
  - Unit 9 explores the composition and functions of Earth's atmosphere, focusing on human activities that contribute to air pollution. Students investigate the sources, impacts, and management strategies for pollutants like greenhouse gases and particulate matter, emphasizing the global and local consequences on health, climate, and ecosystems. The unit encourages critical thinking about equitable access to clean air and the role of policy and technology in mitigating pollution for a sustainable future.

Reporting Student Progress (link to NB's Assessment System)
All courses follow a balanced assessment system with Practice and Assessments.
Each category includes formative, summative and alternative assessments.

Accommodations and Modifications (link to menu)
Integrated accommodations and modifications for special education students, English language learners, students at risk of school failure, gifted and talented students, and students with 504 plans.