

Course Title:	Environmental Physics and Chemistry Honors
Grade(s):	9

Course Description

This course explores the fundamental principles of Earth and Space science, including the structure of atoms, the formation and evolution of the universe and stars, and the ways energy and radiation travel through space. Students will investigate Earth's interior, plate tectonics, landform formation, natural hazards, the cycling and management of Earth's resources, distinguishing between renewable and nonrenewable energy types, and evaluating human impacts. The course also examines climate systems, extreme weather, and climate change, including causes, consequences, and practical solutions. The honors level of this course, while studying the same concepts and skills as the academic class, challenges students to work at a deeper level, at a faster pace and use higher level mathematical applications. By the end of the course, students will be able to analyze scientific data, explain natural processes, and develop evidence-based solutions to challenges facing Earth and its environment.

Honors-level courses are designed to challenge the advanced learner. Students should expect to reach a deeper scope of skills than the academic class: a higher reading stamina, the motivation to revise work, critical thinking skills, and the propensity to finish complex tasks in a timely manner. Students in honors-level classes are expected to have a solid foundation of skills from previous courses and an ability to connect these skills to new learning and problem solving. Students taking an honors-level class have demonstrated the ability to take responsibility for their own learning, work fluidly both independently and collaboratively, and display the propensity to finish complex tasks in a timely manner. These students should consistently aspire to achieve higher-level quality work through self-reflection and self-advocacy. These classes are recommended to students by teachers who have evaluated a student's past practice and achievement.

Approved Curricular Materials/Textbook(s)

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: Introduction to Science & the Scientific Method	This unit provides students with a foundational understanding of science as a way of knowing and the methods scientists use to explore the natural world. Students will examine the principles of the scientific method, including observation, hypothesis formation, experimentation, data collection, analysis, and drawing conclusions. Emphasis is placed on developing critical thinking, problem-solving, and evidence-based reasoning skills. The unit also explores the role of science in everyday life, highlighting how scientific inquiry contributes to technological advancement, informed decision-making, and understanding complex phenomena. Through hands-on investigations and real-world examples, students will learn to apply the scientific method systematically to test ideas, evaluate results, and communicate findings effectively. By the end of the unit, students will be able to design and conduct experiments, analyze data, and explain how scientific inquiry provides reliable knowledge about the natural world.	2 weeks (August and September)
Unit 2: Astronomy	This unit introduces students to the study of astronomy, the scientific exploration of the universe beyond Earth. Students will explore celestial objects such as stars, planets, moons, galaxies, and nebulae, and examine their properties, movements, and interactions. The unit emphasizes understanding the scale, structure, and dynamics of the universe, from our solar system to distant galaxies. Students will also learn about the tools and techniques astronomers use, including telescopes, satellites, and space probes, and how these instruments enable the observation and measurement of celestial phenomena. The unit incorporates both historical and modern perspectives, highlighting key discoveries and the evolution of our understanding of the cosmos. By the end of the unit, students will be able to describe celestial objects and events, explain the role of technology in astronomical observation, and understand how astronomy contributes to our knowledge of the universe.	8 weeks (End of September, October and November)

Unit 3: Plate Tectonics	This unit explores the scientific principles behind plate tectonics and the dynamic nature of Earth's lithosphere. Students will examine the structure of Earth's layers and learn how the movement of tectonic plates shapes the planet's surface through processes such as earthquakes, volcanic activity, mountain building, and oceanic trench formation. The unit also investigates the types of plate boundaries—divergent, convergent, and transform—and the geological features and natural hazards associated with each. Students will explore the evidence supporting plate tectonic theory, including fossil distribution, seafloor spreading, and patterns of earthquakes and volcanoes. By the end of the unit, students will be able to explain how plate movements influence Earth's surface, interpret geological evidence, and understand the role of plate tectonics in shaping the planet's past, present, and future.	8 weeks (End of November, December and January)
Unit 4: Earth Systems	This unit introduces students to the concept of Earth as an interconnected system, composed of the geosphere, hydrosphere, atmosphere, and biosphere. Students will explore how these spheres interact and influence one another, shaping the planet's landscapes, climate, and ecosystems. The unit emphasizes processes such as weathering, erosion, plate tectonics, the water cycle, and energy transfer, demonstrating how matter and energy move through and between Earth's systems. Students will also examine human impacts on these systems, including environmental changes and sustainability challenges. By the end of the unit, students will be able to describe the components of Earth's systems, explain their interactions, and analyze how changes in one system can affect the others, fostering a holistic understanding of the planet and its dynamic processes.	10 weeks (End of January, February and part of March)
Unit 5: Earth and Human Activity	This unit examines the relationship between human activity and Earth's natural systems, highlighting how people impact the geosphere, hydrosphere, atmosphere, and biosphere. Students will explore topics such as resource use, pollution, land development, climate change, and conservation, analyzing how human actions can alter Earth's environments.	9 weeks (End of March, April, May and June)

	The unit emphasizes the cause-and-effect connections between human activity and natural processes, encouraging students to evaluate environmental challenges and consider sustainable solutions. Through case studies and data analysis, learners will investigate real-world examples of environmental change and human intervention. By the end of the unit, students will be able to explain the impact of human activity on Earth's systems, assess environmental risks, and propose strategies for minimizing negative effects while promoting sustainability.	
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