Cycle 1	**27 Days** Aug.23 - Oct. 1, 2021	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** **The student will:**
Unit 1 **Introduction to Environmental Science.** The focus of this unit is to look at the different aspects and subsections of environmental science, and how the environmental movement has affected society and the world. Students are introduced to environmental careers, and contributions of scientists.	**4 class periods** (90-min. each) or **8 class periods** (45-min. each) *Enrichment Opportunities* *Aug. 2-13* *Teachers Report to Work* *Aug. 16* *Teacher Service Days* *Aug. 16-17,* *Aug. 19-20* *Teacher Prep Day* *(no students)* *Aug. 18* *Labor Day* *Sept. 6* *Fall Holiday* *Sept. 16* *Teacher Service Day* *(no students)* *Sept. 17*	**Science Process Standards:** Ⓟ **ENVS.3E** Describe the connection between environmental science and future careers. Ⓟ **ENVS.3F** Research and describe the history of environmental science and contributions of scientists. Ⓟ **ENVS.1A** Demonstrate safe practices during laboratory and field investigations, including appropriate first aid responses to accidents that could occur in the field such as insect stings, animal bites, overheating, sprains, and breaks. Ⓟ **ENVS.1B** Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials. Ⓟ **ENVS.2G** Demonstrate the use of course apparatuses, equipment, techniques, and procedures, including meter sticks, rulers, pipettes, graduated cylinders, triple beam balances, timing devices, pH meters or probes, thermometers, calculators, computers, Internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 100-foot appraiser's tapes, tarps, shovels, trowels, screens, buckets, and rock and mineral samples. Ⓟ **ENVS.2H** Use a wide variety of additional course apparatuses, equipment, techniques, materials, and procedures.

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Cycle 1	**27 Days** Aug.23 - Oct. 1, 2021	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** **The student will:**
Unit 2 Biogeochemical Cycles The focus of this unit is on the biogeochemical cycles, abiotic and biotic factors, and how substances such as dissolved oxygen, chlorides, and nitrates impact an ecosystem.	**7 class periods** (90-min. each) or **14 class periods** (45-min. each)	**Science Content Standards:** Ⓡ **ENVS.4C** Diagram abiotic cycles, including the rock, hydrologic, carbon, and nitrogen cycles. Ⓢ **ENVS.4D** Make observations and compile data about fluctuations in abiotic cycles and evaluate the effects of abiotic factors on local ecosystems and local biomes. Ⓡ **ENVS.4E** Measure the concentration of solute, solvent, and solubility of dissolved substances such as dissolved oxygen, chlorides, and nitrates and describe their impact on an ecosystem. **Science Process Standards:** Ⓟ **ENVS.2A** Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. Ⓟ **ENVS.2B** Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Ⓟ **ENVS.2C** Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypothesis, scientific theories are well-established and highly reliable explanations, but may be subject to change as new areas of science and new technologies are developed. Ⓟ **ENVS.2D** Distinguish between scientific hypothesis and scientific theories. Ⓟ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. **STEM project on the importance of nutrient cycles to the environment**

Cycle 2	29 Days Oct. 5 - Nov. 12, 2021	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** **The student will:**
Unit 3 **Energy Flow** The focus of this unit is on the process of the flow of energy in ecosystems. Students are introduced to the heat flow process, as well as the three laws of thermodynamics.	**4 class periods** (90-min. each) or **8 class periods** (45-min. each) *Teacher Service Day* *(no students)* *Oct. 04*	**Science Content Standards:** Ⓡ **ENVS.6C** Explain the flow of energy in an ecosystem, including conduction, convection, and radiation. Ⓢ **ENVS.6D** Investigate and explain the effects of energy transformations in terms of the laws of thermodynamics within an ecosystem. Ⓡ **ENVS.6E** Investigate and identify energy interactions in an ecosystem. **Science Process Standards:** Ⓟˢ **ENVS.2F** Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range. Ⓟˢ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟˢ **ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation. Ⓟˢ **ENVS.2K** Communicate valid conclusions supported by the data through methods. Ⓟˢ **ENVS.3C** Draw inferences based on data related to promotional materials for products and services.
Unit 4 **Ecosystem Interactions** The focus of this unit is on the different components of the geosphere, hydrosphere, atmosphere, and biosphere. Students are also introduced to how the components interact and the effects of natural events.	**8 class periods** (90-min. each) or **16 class periods** (45-min. each)	**Science Content Standards:** Ⓡ **ENVS.6A** Define and identify the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere and the interactions among them. Ⓡ **ENVS.8A** Analyze and describe the effects on areas impacted by natural events such as tectonic movement, volcanic events, fires, tornadoes, hurricanes, flooding, tsunamis, and population growth. Ⓡ **ENVS.8C** Examine how natural processes such as succession and feedback loops restore habitats and ecosystems. **Science Process Standards:** Ⓟˢ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟˢ **ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation. Ⓟˢ **ENVS.3A** In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing. **STEM project on the effect of natural events on humans and the environment**

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Cycle 3	**30 Days**	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
	Nov. 15, 2021 - Jan. 14, 2022	

Unit	# Class Periods	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** **The student will:**
Unit 5 Biodiversity and Extinction This unit focuses on the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. Students are introduced to invasive species, extinction, and biodiversity. Students become familiar with using a dichotomous key.	**12 class periods** (90-min. each) or **24 class periods** (45-min. each) *Thanksgiving Break Nov. 22-26* *Enrichment Opportunities Dec. 20-21* *Winter Break Dec. 20-31* *MLK Jr. Day Jan. 17* *Teacher Prep Day (no students) Jan. 18*	**Science Content Standards:** Ⓢ **ENVS.4A** Identify native plants and animals using a dichotomous key. Ⓢ **ENVS.4B** Assess the role of native plants and animals within a local ecosystem and compare them to plants and animals in ecosystems within four other biomes. Ⓢ **ENVS.4F** Predict how the introduction or removal of an invasive species may alter the food chain and affect existing populations in an ecosystem. Ⓢ **ENVS.4G** Predict how species extinction may alter the food chain and affect existing populations in an ecosystem. Ⓡ **ENVS.4H** Research and explain the causes of species diversity and predict changes that may occur in an ecosystem if species and genetic diversity is increased or reduced. **Science Process Standards:** ⓅⓈ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. ⓅⓈ **ENVS.3A** In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing. **STEM project on the impact of invasive species in an ecosystem**

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Cycle 4	27 Days	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
	Jan.19 - Feb. 25, 2022	

Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The student will:
Unit 6 **Renewable and Nonrenewable Resources** The focus of this unit is on the different sources of renewable and nonrenewable resources. Students are introduced to the sources of energy, oil, natural gas, coal, nuclear, solar, geothermal, hydroelectric, and wind. Students are also introduced to the concept of sustainability and ecological footprint.	**5 class periods** (90-min. each) or **10 class periods** (45-min. each) *Teacher Service Day/Presidents' Day* *(no students)* *Feb. 21*	**Science Content Standards:** Ⓡ **ENVS.5C** Document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability. Ⓢ **ENVS.5D** Identify renewable and non-renewable resources that must come from outside an ecosystem such as food, water, lumber, and energy. Ⓡ **ENVS.5E** Analyze and evaluate the economic significance and interdependence of resources within the environmental system. Ⓢ **ENVS.6B** Describe and compare renewable and non-renewable energy derived from natural and alternative sources such as oil, natural gas, coal, nuclear, solar, geothermal, hydroelectric, and wind. **Science Process Standards:** Ⓟ**Ⓢ ENVS.2E** Follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology. Ⓟ**Ⓢ ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟ**Ⓢ ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation.
Unit 7 **Natural Processes and Events** The focus of this unit is to look at the natural events and processes that shape the planet and change our environment. Students are introduced to plate tectonics, natural disasters, ecological succession, weather and climate, as well as global warming.	**6 class periods** (90-min. each) or **12 class periods** (45-min. each)	**Science Content Standards:** Ⓡ **ENVS.8A** Analyze and describe the effects on areas impacted by natural events such as tectonic movement, volcanic events, fires, tornadoes, hurricanes, flooding, tsunamis, and population growth. Ⓡ **ENVS.8C** Examine how natural processes such as succession and feedback loops restore habitats and ecosystems. Ⓢ **ENVS.8D** Describe how temperature inversions impact weather conditions, including El Niño and La Niña oscillations. Ⓢ **ENVS.8E** Analyze the impact of temperature inversions on global warming, ice cap and glacial melting, and changes in ocean currents and surface temperatures **Science Process Standards:** Ⓟ**Ⓢ ENVS.2F** Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range. Ⓟ**Ⓢ ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟ**Ⓢ ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation. **STEM project on renewable and non-renewable resources**

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Cycle 5	**33 Days**	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
	Feb. 28 - Apr. 22, 2022	

Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The student will:
Unit 8 **Land and Water Use** The focus of this unit is on land and water use and management, its effects on the environment, and conservation. Students are introduced to the measures taken for the conservation of water and its quality.	**5 class periods** (90-min. each) or **10 class periods** (45-min. each) *Enrichment Opportunities Mar. 14-16* *Spring Break Mar. 14-18* *Chávez-Huerta Day Mar. 28* *Spring Holiday Apr. 15*	**Science Content Standards:** Ⓢ **ENVS.5A** Summarize methods of land use and management and describe its effects on land fertility. Ⓡ **ENVS.5B** Identify source, use, quality, management, and conservation of water. **Science Process Standards:** Ⓟⓢ **ENVS.2F** Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range. Ⓟⓢ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟⓢ **ENVS.3A** In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing.
Unit 9 **Pollution and Waste** The focus of this unit is on the different sources of pollution and waste the human population contributes to the environment. Students are introduced to the types of pollution in the air, soil, and water.	**8 class periods** (90-min. each) or **16 class periods** (45-min. each)	**Science Content Standards:** Ⓢ **ENVS.5F** Evaluate the impact of waste management methods such as reduction, reuse, recycling, and composting on resource availability. Ⓡ **ENVS.9A** Identify causes of air, soil, and water pollution, including point and nonpoint sources. Ⓢ **ENVS.9B** Investigate the types of air, soil, and water pollution such as chlorofluorocarbons, carbon dioxide, pH, pesticide runoff, thermal variations, metallic ions, heavy metals, and nuclear waste. Ⓡ **ENVS.9C** Examine the concentrations of air, soil, and water pollutants using appropriate units. **Science Process Standards:** Ⓟⓢ **ENVS.2E** Follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology. Ⓟⓢ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟⓢ **ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation. Ⓟⓢ **ENVS.3A** In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing. **STEM project on Land and Water pollution**

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Cycle 6	**31 Days**	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
	Apr. 25 - June 7, 2022	

Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The student will:
Unit 10 Human Population The focus of this unit is on demography and human population and carrying capacity dynamics. Students are going to calculate birth and death rates, and exponential growth of populations. Students analyze and predict the impact of populations on diseases, urbanization, and migration.	**4 class periods** (90-min. each) or **8 class periods** (45-min. each) *Memorial Day May 30* *Teacher Prep Day (no students) June 8*	**Science Content Standards:** Ⓡ **ENVS.7A** Relate carrying capacity to population dynamics. Ⓢ **ENVS.7B** Calculate birth rates and exponential growth of populations. Ⓢ **ENVS.7C** Analyze and predict the effects of non-renewable resource depletion. Ⓢ **ENVS.7D** Analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes. **Science Process Standards:** ⓅⓈ **ENVS.2E** Follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology. ⓅⓈ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. ⓅⓈ **ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation. ⓅⓈ **ENVS.3D** Evaluate the impact of research on scientific thought, society, and the environment.

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Cycle 6	31 Days	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
	Apr. 25 - June 7, 2022	

Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The student will:
Unit 11 Effects of Human Activities The focus of this unit is on the effects the human population has on the environment, and how society is making efforts to preserve and conserve the natural environment. Students are introduced to the rules and regulations of human activities. Students understand the impacts of global warming and "green" living.	**6 class periods** (90-min. each) or **12 class periods** (45-min. each)	**Science Content Standards:** Ⓢ **ENVS.9D** Describe the effect of pollution on global warming, glacial and ice cap melting, greenhouse effect, ozone layer, and aquatic viability Ⓢ **ENVS.9E** Evaluate the effect of human activities, including habitat restoration projects, species preservation efforts, nature conservancy groups, hunting, fishing, ecotourism, all-terrain vehicles, and small personal watercraft, on the environment. Ⓢ **ENVS.9G** Analyze how ethical beliefs can be used to influence scientific practices such as methods for increasing food production. Ⓡ **ENVS.9F** Evaluate cost-benefit trade-offs of commercial activities such as municipal development, farming, deforestation, over-harvesting, and mining. Ⓡ **ENVS.9H** Analyze and evaluate different views on the existence of global warming. Ⓢ **ENVS.9I** Discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards. Ⓢ **ENVS.9J** Research the advantages and disadvantages of "going green" such as organic gardening and farming, natural pest control, and energy-efficient homes. **Science Process Standards:** Ⓟ Ⓢ **ENVS.2D** Distinguish between scientific hypothesis and scientific theories. Ⓟ Ⓢ **ENVS.2J** Perform calculations using dimensional analysis, significant digits, and scientific notation. Ⓟ Ⓢ **ENVS.3D** Evaluate the impact of research on scientific thought, society, and the environment.

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Cycle 6	31 Days	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
	Apr. 25 - June 7, 2022	

Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The student will:
Unit 12 Environmental Policy and Law The focus of this unit is the policies and laws that have been put into place to protect wildlife and the human population. Students become familiar with local, state, national, and international policy.	**2 class periods** (90-min. each) **or** **4 class periods** (45-min. each)	**Science Content Standards:** Ⓡ **ENVS.9K** Analyze past and present local, state, and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act. Ⓢ **ENVS.9L** Analyze past and present international treaties and protocols such as the environmental Antarctic Treaty System, Montreal Protocol, and Kyoto Protocol. **Science Process Standards:** Ⓟⓢ **ENVS.2E** Follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology. Ⓟⓢ **ENVS.2F** Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range. Ⓟⓢ **ENVS.3B** Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. Ⓟⓢ **ENVS.3D** Evaluate the impact of research on scientific thought, society, and the environment.
Unit 13 STEM Project This project would include the major information learned in the course. This is going to include information about the human population, and the impacts that human activities have on the environment. The project would also include legislation..	**1 class period** (90-min. each) **or** **2 class periods** (45-min. each)	**Science Content Standards:** *This will depend on the topic of the project.* **Science Process Standards:** Ⓟⓢ **ENVS.2F** Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range. Ⓟⓢ **ENVS.2I** Organize, analyze, evaluate, build models, make inferences, and predict trends from data. Ⓟⓢ **ENVS.3A** In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing. Ⓟⓢ **ENVS.2E** Follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology Ⓟⓢ **ENVS.3B** Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. Ⓟⓢ **ENVS.3D** Evaluate the impact of research on scientific thought, society, and the environment.

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