



Alignment Document
State of Washington
And
Aventa Learning Environmental Science

Environmental Science
 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
1	The student understands and uses scientific concepts and principles		
1.1	use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things		
1.1.1	Physical Science		
1.1.1.a	use properties to sort natural and manufactured materials and objects, for example size, weight, shape, color, texture, and hardness		
1.1.1.b	describe the relative position and motion of objects		
1.1.1.c	describe experiences with sound, for example vibrations, echoes, and pitch; describe experiences with light in terms of bouncing off, passing through, and changes in path direction		
1.1.2	Earth/Space Science		
1.1.2.a	observe and examine physical properties of earth materials such as rocks and soil, water (as liquid, solid, and vapor) and the gases of the atmosphere	Introduction to Environmental Science	The Dynamic Earth
		Water, Air and Land	Water
1.1.3	Life Science		
1.1.3.a	distinguish living organisms from nonliving objects, and use characteristics to sort common organisms into plant and animal groups	Ecology	The Organization of Life



1.2	recognize the components, structure, and organization of systems and the interconnections within and among them		
1.2.1	Systems		
1.2.1.a	identify the parts of a system, how the parts go together, and how they depend on each other		
1.2.2	Physical Science		
1.2.2.a	understand that energy keeps things running and comes in many forms	Mineral and Energy Resources	Nonrenewable Energy
		Energy Resources	Renewable Energy
1.2.2.b	know that energy can be transferred between various forms	Ecology	How Ecosystems Work
1.2.2.c	know that matter is made of small particles		
1.2.2.d	know that matter can undergo changes of state such as evaporation, condensation, or freezing and thawing	Water, Air and Land	Water
1.2.3	Earth/Space Science		
1.2.3.a	recognize that the earth is a spherical planet with a mainly solid interior and a surface composed of landforms, bodies of water, and an atmosphere	Introduction to Environmental Science	The Dynamic Earth
1.2.3.b	know that the earth is one of several planets that orbits the sun, and the moon orbits the earth	Water, Air and Land	Atmosphere and Climate Change
1.2.4	Life Science		
1.2.4.a	know that living things are composed of parts made of cells		
1.2.4.b	describe the life cycles of plants and animals, and recognize the differences between inherited and acquired characteristics		
1.2.4.c	understand the organization and function of human body structures and internal organs, and how they work together		
1.3	understand how interactions within and among systems cause changes in matter and energy		
1.3.1	Physical Science		
1.3.1.a	describe forces in terms of strength and direction		
1.3.1.b	investigate and recognize factors which determine the effects of a push or pull on the motion of objects		
1.3.2	Earth/Space Science		



1.3.2.a	identify processes that slowly change the surface of the earth such as erosion and weathering, and those that rapidly change the surface of the earth such as landslides, volcanic eruptions, and earthquakes	Introduction to Environmental Science	The Dynamic Earth
1.3.2.b	recognize that fossils provide evidence of plants, animals, and environments that existed long ago		
1.3.2.c	observe and measure weather indicators such as temperature, wind direction and speed, and precipitation, noting changes and patterns of change from day to day and over the seasons	Introduction to Environmental Science	The Dynamic Earth
		Water, Air and Land	Atmosphere and Climate Change
1.3.2.d	observe and describe the patterns of movement of the sun and moon relative to each other and the earth, and relate them to the earth's rotation	Water, Air and Land	Atmosphere and Climate Change
1.3.3	Life Science		
1.3.3.a	recognize that living things need constant energy supplied from food or light and that, in ecosystems, substances such as air, water, nutrients, and the chemicals in food are continually recycled	Ecology	The Organization of Life
		Ecology	How Ecosystems Work
1.3.3.b	know that fossil records show patterns of structural change in organisms over time		
1.3.3.c	describe how an organism's behavior and ability to survive is influenced by its environment, other life forms, and availability of food and/or other resources	Ecology	The Organization of Life
1.3.3.d	know humans and other living things depend on the natural environment, and can cause changes in their environment that affect their ability to survive	Ecology	The Organization of Life
		Populations	Understanding Populations
		Populations	Biodiversity
2	The student knows and applies the skills and processes of science and technology.	Introduction to Environmental Science	Tools of Environmental Science
2.1	develop abilities necessary to do scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
2.1.1	ask questions about objects, organisms, and events in the environment	Introduction to Environmental Science	Tools of Environmental Science
2.1.2	plan and conduct simple investigations, using appropriate tools, measures, and safety rules	Introduction to Environmental Science	Tools of Environmental Science

2.1.3	use data to construct reasonable explanations	Introduction to Environmental Science	Tools of Environmental Science
2.1.4	model objects, events, or processes by representing them with concrete objects, metaphors, analogies, or other conceptual or physical constructs	Introduction to Environmental Science	Tools of Environmental Science
2.1.5	record and report observations, explanations, and conclusions using oral, written, and mathematical expression	Introduction to Environmental Science	Tools of Environmental Science
2.2	apply science knowledge and skills to solve problems or meet challenges	Introduction to Environmental Science	Tools of Environmental Science
2.2.1	identify problems found in familiar contexts in which science/technology can be or has been used to design solutions	Introduction to Environmental Science	Tools of Environmental Science
2.2.2	propose, design, and test a solution to a problem	Introduction to Environmental Science	Tools of Environmental Science
2.2.3	evaluate how well a design or a product solves a problem	Introduction to Environmental Science	Tools of Environmental Science
3	The student understands the nature and contexts of science and technology.	Introduction to Environmental Science	Tools of Environmental Science
3.1	understand the nature of scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
3.1.1	understand that all scientific observations should be reported accurately even when they contradict expectations	Introduction to Environmental Science	Tools of Environmental Science
3.1.2	distinguish between questions that can be answered with science and technology and those that cannot	Introduction to Environmental Science	Tools of Environmental Science
3.1.3	explain why similar investigations may not produce similar results	Introduction to Environmental Science	Tools of Environmental Science
3.1.4	recognize that results of scientific investigations can come from expected and unexpected sources	Introduction to Environmental Science	Tools of Environmental Science
3.1.5	know that ideas in science change as new scientific thinking, theories, and evidence arise	Introduction to Environmental Science	Tools of Environmental Science
3.2	know that science and technology are human endeavors, interrelated to each other, to society, and to the workplace	Populations	Biodiversity
3.2.1	know that science and technology have been practiced by all peoples throughout history	Populations	The Human Population
3.2.2	recognize that people have invented tools for everyday life and for scientific investigations	Introduction to Environmental Science	Tools of Environmental Science
3.2.3	identify the knowledge and skills of science, mathematics, and technology used in common occupations	Our Health and Our Future	Economics, Policy and the Future



AVENTA LEARNING

1	The student understands and uses scientific concepts and principles		
1.1	use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things		
1.1.1	Physical Science		
1.1.1.a	use physical and chemical properties to sort and identify substances, for example density, boiling point, and solubility		
1.1.1.b	describe the positions, relative speeds, and changes in speed of objects		
1.1.1.c	describe sound, water waves, and light, using wave properties such as, wave length, reflection, refraction, transmission, absorption, scattering, and interference		
1.1.2	Earth/Space Science		
1.1.2.a	classify rocks and soils into groups based on their chemical and physical properties; describe the processes by which rocks and soils are formed		
1.1.3	Life Science		
1.1.3.a	categorize plants and animals into groups according to how they accomplish life processes and by similarities and differences in external and internal structures	Ecology	The Organization of Life
1.2	recognize the components, structure, and organization of systems and the interconnections within and among them		
1.2.1	Systems		
1.2.1.a	describe how the parts of a system interact and influence each other		
1.2.2	Physical Science		
1.2.2.a	understand that energy is a property of substances and systems and comes in many forms, including stored energy, energy of motion, and heat energy such as heat, light, electrical, mechanical, sound, nuclear, and chemical	Mineral and Energy Resources	Nonrenewable Energy
		Mineral and Energy Resources	Renewable Energy
1.2.2.b	determine factors that affect rate and amount of energy transfer; associate a decrease in one form of energy with an increase in another		



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1.2.2.c	understand that all matter is made up of atoms, which may be combined in various kinds, ways, and numbers		
1.2.2.d	understand physical and chemical changes at the particle level, and know that matter is conserved		
1.2.3	Earth/Space Science		
1.2.3.a	describe the components and relationships of the earth system, including the solid earth (crust, hot convecting mantle and dense metallic core), the hydrosphere (oceans, seas, lakes, rivers, and streams), and the atmosphere (a mixture of gases)	Introduction to Environmental Science	The Dynamic Earth
1.2.3.b	describe the relationships of the earth to the sun, the moon, the other planets and their moons, and smaller objects such as asteroids and comets	Water, Air and Land	Atmosphere and Climate Change
1.2.4	Life Science		
1.2.4.a	know that specialized cells within multicellular organisms form different kinds of tissues, organs, and organ systems to carry out life functions		
1.2.4.b	understand that all living things reproduce and pass on genetic information, and that an organism's characteristics are determined by both genetic and environmental influences		
1.2.4.c	identify and describe human life functions, and the interconnecting organ systems necessary to maintain human life such as digestion, respiration, reproduction, circulation, excretion, movement, disease prevention, control, and coordination		
1.3	understand how interactions within and among systems cause changes in matter and energy		
1.3.1	Physical Science		
1.3.1.a	know the factors that determine the strength of the various forces		
1.3.1.b	understand the effects of balanced and unbalanced forces on the motion of objects along a straight line		
1.3.2	Earth/Space Science		
1.3.2.a	describe the processes of constructive and destructive forces and how they continually change landforms on earth	Introduction to Environmental Science	The Dynamic Earth



1.3.2.b	know the importance of fossils in documenting life and environmental changes over time		
1.3.2.c	relate global atmospheric movement and the formation of ocean currents to weather and climate	Introduction to Environmental Science	The Dynamic Earth
		Water, Air and Land	Water
1.3.2.d	describe how the regular and predictable motions of most objects in the solar system account for such phenomena as the day, year, phases of the moon, eclipses, seasons, and ocean tides	Water, Air and Land	Atmosphere and Climate Change
1.3.3	Life Science		
1.3.3.a	understand that individual organisms use matter and energy for life processes, and the mechanisms accomplishing these processes are complex, integrated, and regulated		
1.3.3.b	describe how biological evolution accounts for species diversity, adaptation, natural selection, extinction, and change in organisms over time	Ecology	The Organization of Life
1.3.3.c	explain how organisms interact with their environment and with other organisms to acquire energy, cycle matter, influence behavior, and establish competitive or mutually beneficial relationships	Ecology	The Organization of Life
		Ecology	How Ecosystems Work
1.3.3.d	explain how human societies' use of natural resources affects quality of life and the health of ecosystems	Populations	The Human Population
		Populations	Biodiversity
		Mineral and Energy Resources	Mining and Mineral Resources
2	The student knows and applies the skills and processes of science and technology.		
2.1	develop abilities necessary to do scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
2.1.1	generate questions that can be answered through scientific investigations	Introduction to Environmental Science	Tools of Environmental Science
2.1.2	design, conduct, and evaluate scientific investigations, using appropriate equipment, mathematics, and safety procedures	Introduction to Environmental Science	Tools of Environmental Science
2.1.3	use evidence from scientific investigations to think critically and logically to develop descriptions, explanations, and predictions	Introduction to Environmental Science	Tools of Environmental Science

2.1.4	correlate models of the behavior of objects, events, or processes to the behavior of the actual things; test models by predicting and observing actual behaviors or processes	Introduction to Environmental Science	Tools of Environmental Science
2.1.5	communicate scientific procedures, investigations, and explanations orally, in writing, with computer-based technology, and in the language of mathematics	Introduction to Environmental Science	Tools of Environmental Science
2.2	apply science knowledge and skills to solve problems or meet challenges	Introduction to Environmental Science	Tools of Environmental Science
2.2.1	identify and examine common, everyday challenges or problems in which science/technology can be or has been used to design solutions	Introduction to Environmental Science	Tools of Environmental Science
2.2.2	identify, design, and test alternative solutions to a challenge or problem	Introduction to Environmental Science	Tools of Environmental Science
2.2.3	compare and contrast multiple solutions to a problem or challenge	Introduction to Environmental Science	Tools of Environmental Science
3	The student understands the nature and contexts of science and technology.	Introduction to Environmental Science	Tools of Environmental Science
3.1	understand the nature of scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
3.1.1	understand the operational and ethical traditions of science and technology such as skepticism, cooperation, intellectual honesty, and proprietary discovery		
3.1.2	understand that scientific investigation is limited to the natural world	Introduction to Environmental Science	Tools of Environmental Science
3.1.3	provide more than one explanation for events or phenomena; defend or refute the explanations using evidence	Introduction to Environmental Science	Tools of Environmental Science
3.1.4	describe how methods of investigation relate to the validity of scientific, experiments, observations, theoretical models, and explanation	Introduction to Environmental Science	Tools of Environmental Science
3.1.5	explain how scientific theory, hypothesis generation, experimentation, and observation are interrelated and may lead to changing ideas	Introduction to Environmental Science	Tools of Environmental Science
3.2	know that science and technology are human endeavors, interrelated to each other, to society, and to the workplace	Introduction to Environmental Science	Tools of Environmental Science
3.2.1	know that science and technology have been developed, used, and affected by many diverse individuals, cultures, and societies throughout human history	Introduction to Environmental Science	Tools of Environmental Science



3.2.2	compare and contrast scientific inquiry and technological design in terms of activities, results, and influence on individuals and society; know that science enables technology and vice versa	Introduction to Environmental Science	Tools of Environmental Science
3.2.3	investigate the use of science, mathematics, and technology within occupational/career areas of interest	Our Health and Our Future	Economics, Policy and the Future
1	The student understands and uses scientific concepts and principles		
1.1	use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things	Ecology	The Organization of Life
1.1.1	Physical Science		
1.1.1.a	examine the basis for the structure and use of the periodic table		
1.1.1.b	describe the average speed, direction of motion, and average acceleration of objects, for example increasing, decreasing, or constant acceleration		
1.1.1.c	describe water waves and sound, relating the ideas of frequency, wave length, and speed, and by relating energy to amplitude		
1.1.2	Earth/Space Science		
1.1.2.a	correlate the chemical composition of earth materials - rocks, soils, water, gases of the atmosphere - with properties that determine their use to humans	Introduction to Environmental Science	The Dynamic Earth
		Water, Air and Land	Water
1.1.3	Life Science		
1.1.3.a	classify organisms into distinct groups according to structural, cellular, biochemical, and genetic characteristics	Ecology	The Organization of Life
1.2	recognize the components, structure, and organization of systems and the interconnections within and among them	Ecology	The Organization of Life
1.2.1	Systems		
1.2.1.a	analyze systems, including the inputs and outputs of a system and its subsystems		
1.2.2	Physical Science		
1.2.2.a	understand many forms of energy as they are found in common situations on earth and in the universe		



1.2.2.b	understand that total energy is conserved; analyze decreases and increases in energy during transfers, in terms of total energy conservation		
1.2.2.c	relate the structural characteristics of atoms to the principles of atomic bonding		
1.2.2.d	analyze and explain the factors that affect physical and chemical changes, and how matter and energy are conserved in a closed system		
1.2.3	Earth/Space Science		
1.2.3.a	explain how patterns and arrangements of landforms, oceans, and atmosphere are determined by natural forces and how the theory of plate tectonics accounts for movement over time	Introduction to Environmental Science	The Dynamic Earth
		Water, Air and Land	Water
1.2.3.b	understand that the solar system is in a galaxy in an expanding universe composed of immense numbers of stars and celestial bodies		
1.2.4	Life Science		
1.2.4.a	understand that specific genes regulate the functions performed by structures within the cells of multicellular organisms		
1.2.4.b	describe how genetic information (DNA) in the cell is controlled at the molecular level, and provides genetic continuity between generations		
1.2.4.c	compare and contrast the specialized structural and functional systems that regulate human growth and development, and maintain health		
1.3	understand how interactions within and among systems cause changes in matter and energy		
1.3.1	Physical Science		
1.3.1.a	identify various forces and their relative magnitudes, and explain everyday situations in terms of force		
1.3.1.b	explain the effects of unbalanced forces in changing the direction of motion of objects		
1.3.2	Earth/Space Science		



1.3.2.a	understand that patterns of movement in the plates that comprise the earth's surface are the result of outward transfer of the earth's internal heat, and that historical patterns of movement can be identified from clues in rock formations; describe how volcanoes and earthquakes in Washington State occur because of this interaction	Introduction to Environmental Science	The Dynamic Earth
1.3.2.b	understand that fossils and radioactive elements can be used to correlate and determine the sequence of geologic events		
1.3.2.c	correlate global climate to energy transfer by the sun, cloud cover, the earth's rotation, and positions of mountain ranges and oceans	Introduction to Environmental Science	The Dynamic Earth
		Water, Air and Land	Atmosphere and Climate Change
1.3.2.d	understand that the earth, planets, sun, and the rest of the celestial bodies in the universe are continuing to evolve because of interactions between matter and forces of nature		
1.3.3	Life Science		
1.3.3.a	explain how organisms can sustain life by obtaining, transporting, transforming, releasing, and eliminating matter and energy	Ecology	The Organization of Life
		Ecology	How Ecosystems Work
1.3.3.b	investigate and examine the scientific evidence used to develop theories for evolution, speciation, adaptation, and biological diversity	Ecology	The Organization of Life
1.3.3.c	compare and contrast the complex factors (biotic and abiotic) that affect living organisms' interactions in biomes, ecosystems, communities, and populations	Ecology	The Organization of Life
		Ecology	How Ecosystems Work
1.3.3.d	analyze the effects of natural events and human activities on the earth's capacity to sustain biological diversity	Ecology	The Organization of Life
		Populations	Biodiversity
2	The student knows and applies the skills and processes of science and technology.		
2.1	develop abilities necessary to do scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
2.1.1	study and analyze questions and related concepts that guide scientific investigations	Introduction to Environmental Science	Tools of Environmental Science



2.1.2	design, conduct, and evaluate systematic and complex scientific investigations, using appropriate technology, multiple measures, and safe approaches	Introduction to Environmental Science	Tools of Environmental Science
2.1.3	formulate and revise scientific explanations and models using logic and evidence; recognize and analyze alternative explanations and predictions	Introduction to Environmental Science	Tools of Environmental Science
2.1.4	use mathematics, computers and/or related technology to model the behavior of objects, events, or processes	Introduction to Environmental Science	Tools of Environmental Science
2.1.5	research, interpret, and defend scientific investigations, conclusions, or arguments; use data, logic, and analytical thinking as investigative tools; express ideas through oral, written, and mathematical expression	Introduction to Environmental Science	Tools of Environmental Science
2.2	apply science knowledge and skills to solve problems or meet challenges	Introduction to Environmental Science	Tools of Environmental Science
2.2.1	study and analyze challenges or problems from local, regional, national, or global contexts in which science/technology can be or has been used to design a solution	Introduction to Environmental Science	Tools of Environmental Science
2.2.2	research, model, simulate, and test alternative solutions to a problem	Introduction to Environmental Science	Tools of Environmental Science
2.2.3	propose, revise, and evaluate the possible constraints, applications, and consequences of solutions to a problem or challenge	Introduction to Environmental Science	Tools of Environmental Science
3	The student understands the nature and contexts of science and technology.		
3.1	understand the nature of scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
3.1.1	analyze and explain why curiosity, honesty, openness, and skepticism are integral to scientific inquiry	Introduction to Environmental Science	Tools of Environmental Science
3.1.2	identify and analyze factors that limit the extent of scientific investigation	Introduction to Environmental Science	Tools of Environmental Science
3.1.3	compare, contrast, and critique divergent results from scientific investigations based on scientific arguments and explanations	Introduction to Environmental Science	Tools of Environmental Science
3.1.4	analyze and evaluate the quality and standards of investigative design, processes, and procedures	Introduction to Environmental Science	Tools of Environmental Science



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3.1.5	know that science involves testing, revising, and occasionally discarding theories; understand that scientific inquiry and investigation lead to a better understanding of the natural world and not to absolute truth	Introduction to Environmental Science	Tools of Environmental Science
3.2	know that science and technology are human endeavors, interrelated to each other, to society, and to the workplace	Introduction to Environmental Science	Tools of Environmental Science
3.2.1	analyze how scientific knowledge and technological advances discovered and developed by individuals and communities in all cultures of the world contribute to changes in societies	Introduction to Environmental Science	Tools of Environmental Science
3.2.2	analyze how the scientific enterprise and technological advances influence and are influenced by human activity, for example societal, environmental, economical, political, or ethical considerations	Introduction to Environmental Science	Tools of Environmental Science
3.2.3	investigate the scientific, mathematical, and technological knowledge, training, and experience needed for occupational/career areas of interest	Introduction to Environmental Science	Tools of Environmental Science