

Earth Science

Strand	Common Curriculum Goal	Standard	Unit/Section
Skills and Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.	1.1 The student will explain why curiosity, honesty, openness, and skepticism are highly regarded in science.	1.1.1 The student will recognize that real problems have more than one solution and decisions to accept one solution over another are made on the basis of many issues.	Throughout the course
		1.1.2 The student will modify or affirm scientific ideas according to accumulated evidence.	Throughout the course
		1.1.3 The student will critique arguments that are based on faulty, misleading data or on the incomplete use of numbers.	Semester A, Section 2
		1.1.4 The student will recognize data that are biased.	
		1.1.5 The student will explain factors that produce biased data (incomplete data, using data inappropriately, conflicts of interest, etc.).	
	1.2 The student will pose scientific questions and suggest investigative approaches to provide answers to questions.	1.2.1 The student will identify meaningful, answerable scientific questions.	Semester A, Section 2 Part P

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		1.2.2 The student will pose meaningful, answerable scientific questions.(NTB)	Semester A, Section 2, Lab
		1.2.3 The student will formulate a working hypothesis.	
		1.2.4 The student will test a working hypothesis.(NTB)	
		1.2.5 The student will select appropriate instruments and materials to conduct an investigation.	
		1.2.6 The student will identify appropriate methods for conducting an investigation (independent and dependent variables, proper controls, repeat trials, appropriate sample size, etc.).	Semester A, Section 2
		1.2.7 The student will use relationships discovered in the lab to explain phenomena observed outside the laboratory.	
		1.2.8 The student will defend the need for verifiable data.	
	1.3 The student will carry out scientific investigations effectively and employ the instruments, systems of measurement, and materials of science appropriately.	1.3.1 The student will develop and demonstrate skills in using lab and field equipment to perform investigative techniques.(NTB)	

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		1.3.2 The student will recognize safe laboratory procedures.	Semester A, Section 2, Safety Lab
		1.3.3 The student will demonstrate safe handling of the chemicals and materials of science.(NTB)	Throughout the course labs
		1.3.4 The student will learn the use of new instruments and equipment by following instructions in a manual or from oral direction.(NTB)	Throughout the course labs
	1.4 The student will demonstrate that data analysis is a vital aspect of the process of scientific inquiry and communication.	1.4.1 The student will organize data appropriately using techniques such as tables, graphs, and webs (for graphs: axes labeled with appropriate quantities, appropriate units on axes, axes labeled with appropriate intervals, independent and dependent variables on correct axes, appropriate title).	
		1.4.2 The student will analyze data to make predictions, decisions, or draw conclusions.	
		1.4.3 The student will use experimental data from various investigators to validate results.	

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		1.4.4 The student will determine the relationships between quantities and develop the mathematical model that describes these relationships.	
		1.4.5 The student will check graphs to determine that they do not misrepresent results.	
		1.4.6 The student will describe trends revealed by data.	
		1.4.7 The student will determine the sources of error that limit the accuracy or precision of experimental results.	
		1.4.8 The student will use models and computer simulations to extend his/her understanding of scientific concepts.(NTB)	
		1.4.9 The student will use analyzed data to confirm, modify, or reject a hypothesis.	
	1.5 The student will use appropriate methods for communicating in writing and orally the processes and results of scientific investigation.	1.5.1 The student will demonstrate the ability to summarize data (measurements/observations).	
		1.5.2 The student will explain scientific concepts and processes through drawing, writing, and/or oral communication.	



Alignment Document
State of Maryland and Aventa Learning

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		1.5.3 The student will use computers and/or graphing calculators to produce the visual materials (tables, graphs, and spreadsheets) that will be used for communicating results.(NTB)	
		1.5.4 The student will use tables, graphs, and displays to support arguments and claims in both written and oral communication.	
		1.5.5 The student will create and/or interpret graphics. (scale drawings, photographs, digital images, field of view, etc.)	
		1.5.6 The student will read a technical selection and interpret it appropriately.	
		1.5.7 The student will use, explain, and/or construct various classification systems.	Semester A, Earth Materials Lab
		1.5.8 The student will describe similarities and differences when explaining concepts and/or principles.	
		1.5.9 The student will communicate conclusions derived through a synthesis of ideas.	

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	1.6 The student will use mathematical processes.	1.6.1 The student will use ratio and proportion in appropriate situations to solve problems.	
		1.6.2 The student will use computers and/or graphing calculators to perform calculations for tables, graphs, or spreadsheets.(NTB)	
		1.6.3 The student will express and/or compare small and large quantities using scientific notation and relative order of magnitude.	
		1.6.4 The student will manipulate quantities and/or numerical values in algebraic equations.	
		1.6.5 The student will judge the reasonableness of an answer.	
	1.7 The student will show that connections exist both within the various fields of science and among science and other disciplines including mathematics, social studies, language arts, fine arts, and technology.	1.7.1 The student will apply the skills, processes, and concepts of biology, chemistry, physics, or earth science to societal issues.	
		1.7.2 The student will identify and evaluate the impact of scientific ideas and/or advancements in technology on society.	



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		1.7.3 The student will describe the role of science in the development of literature, art, and music.(NTB)	
		1.7.4 The student will recognize mathematics as an integral part of the scientific process.(NTB)	
		1.7.5 The student will investigate career possibilities in the various areas of science.(NTB)	
		1.7.6 The student will explain how development of scientific knowledge leads to the creation of new technology and how technological advances allow for additional scientific accomplishments.	
Concepts of Earth/Space Science: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain the physical behavior of the environment, Earth, and the universe.	2.1 The student will identify and describe techniques used to investigate the universe and Earth.	2.1.1 The student will describe the purpose and advantage of current tools, delivery systems and techniques used to study the universe.	

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		2.1.2 The student will describe the purpose and advantage of current tools, delivery systems and techniques used to study the atmosphere, land and water on Earth.	
	2.2 The student will describe and apply the concept of natural forces and apply them to the study of Earth/Space Science.	2.2.1 The student will explain the role of forces in the formation and operation of the universe.	
		2.2.2 The student will explain the role and interaction of revolution, rotation and gravity on the Sun-Earth-Moon system.	Semester B, Astronomy Unit, Section 1
	2.3 The student will explain how the transfer of energy and matter affect Earth systems.	2.3.1 The student will describe how energy and matter transfer affect Earth systems.	Semester B, Atmosphere and Climate Unit, Section 3
		2.3.2 The student will explain how global conditions are affected when natural and human-induced change alter the transfer of energy and matter.	Semester A, The Surface of the Earth Unit, Section 3
	2.4 The student will analyze the dynamic nature of the geosphere.	2.4.1 The student will compare the origin and structure of igneous, metamorphic and sedimentary rocks.	Semester A, Earth's Materials Unit, Section 3
		2.4.2 The student will explain how the transfer of energy drives the rock cycle.	Semester A, Earth's Materials Unit, Section 3



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		2.4.3 The student will explain changes in Earth's surface using plate tectonics.	Semester A, Interior of the Earth Unit, Section 1
	2.5 The student will investigate methods that geologists use to determine the history of Earth.	2.5.1 The student will apply geologic principles used to date Earth's geologic and biologic events.	Semester B, Earth History Unit, Section 1
		2.5.2 The student will compare events in Earth's history that have been grouped according to similarities.	Semester B, Earth History Unit, Section 2