Alignment to Next Generation Science Standards – Grade 6

Chapter/Lesson	NGSS (PE)	DCI	CCC	SEP
Volume A				
Chapter 0 Safety and Scientific Design				
Lesson 1 Lab Safety				
Lesson 2 Lab Procedures				
Lesson 3 Scientific Method				
Lesson 4 Independent and Dependent Variable				
Lesson 5 Recording Data				
Lesson 6 Criteria and Constraints for Design	MS-ETS1-1	ETS1.A		Incorporate Engineering Practices
Lesson 7 Evaluate Designs	MS-ETS1-2	ETS1.B		Incorporate Engineering Practices
Lesson 8 Analyze Data Based on Design	MS-ETS1-3	ETS1.B		Incorporate Engineering Practices
Lesson 9 Design Optimization	MS-ETS1-4	ETS1.B		Incorporate Engineering Practices
Chapter 1 Planet Earth and the Solar System				
Lesson 1 Earth and the Solar System	MS-ESS1-2	ESS1.B	Systems and System Models	Developing and Using Models
Lesson 2 How the Solar System Formed	MS-ESS1-2	ESS1.B	Systems and System Models	Developing and Using Models
Lesson 3 Scale and the Solar System	MS-ESS1-3	ESS1.B	Scale, Proportion, and Quantity	Analyzing and Interpreting Data
Lesson 4 The Earth-Sun-Moon System	MS-ESS1-1	ESS1.B	Patterns	Developing and Using Models
Lesson 5 Earth's Materials	MS-ESS3-1	ESS3.A	Cause and Effect	Constructing Explanations and Designing Solutions
Chapter 2 Matter: Structure and Properties				
Lesson 1 Natural Resources and Synthetic Materials	MS-PS1-3	PS1.A	Structure and Function	Obtaining, Evaluating, and Communicating Information
Lesson 2 Properties of Substances	MS-PS1-2	PS1.A	Structure and Function	Obtaining, Evaluating, and Communicating Information
Lesson 3 The Structure of Matter	MS-PS1-1	PS1.A	Scale, Proportion, and Quantity	Obtaining, Evaluating, and Communicating Information
Lesson 4 States of Matter	MS-PS1-4	PS1.A	Cause and Effect	Obtaining, Evaluating, and Communicating Information

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Chapter 3 Matter: Chemical Reactions				
Lesson 1 When Matter Reacts	MS-PS1-2	PS1.B	Patterns	
Lesson 2 Matter Is Conserved	MS-PS1-5	PS1.B	Energy and Matter; Structure and Function	
Lesson 3 Energy in Chemical Reactions	MS-PS1-6	PS1.B	Energy and Matter; Structure and Function	Incorporate Engineering Practices
Lesson 4 Exothermic Processes	MS-PS1-6	PS1.B	Energy and Matter; Structure and Function	Incorporate Engineering Practices
Lesson 5 Endothermic Processes	MS-PS1-6	PS1.B	Energy and Matter; Structure and Function	Incorporate Engineering Practices
Chapter 4 Life: Relationships and Patterns				
Lesson 1 Ecosystem Relationships	MS-LS2-1	LS2.A	Cause and Effect	Analyzing and Interpreting Data
Lesson 2 Competition for Resources	MS-LS2-1	LS2.A	Cause and Effect	Analyzing and Interpreting Data
Lesson 3 Growth and Population Patterns	MS-LS2-1	LS2.A	Cause and Effect	Analyzing and Interpreting Data
Lesson 4 Patterns of Interaction	MS-LS2-2	LS2.A	Patterns	Constructing Explanations and Designing Solutions
Lesson 5 Predatory Interactions	MS-LS2-2	LS2.A	Patterns	Constructing Explanations and Designing Solutions
Lesson 6 Symbiotic Interactions	MS-LS2-2	LS2.A	Patterns	Constructing Explanations and Designing Solutions
Chapter 5 Energy				
Lesson 1 Kinetic Energy	MS-PS3-1	PS3.A	Scale, Proportion, and Quantity	
Lesson 2 Potential Energy	MS-PS3-2	PS3.A	Systems and System Models	
Lesson 3 Energy Transfer	MS-PS3-5	PS3.B	Energy and Matter	
Lesson 4 Thermal Energy	MS-PS1-4	PS3.A		
Lesson 5 Thermal Energy Transfer	MS-PS3-3	PS3.B	Scale, Proportion, and Quantity	
Lesson 6 Temperature	MS-PS3-3	PS3.A	Energy and Matter	Incorporate Engineering Practices
Lesson 7 Changing the Temperature of Matter	MS-PS3-4	PS3.B	Energy and Matter	Incorporate Engineering Practices

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Volume B				
Chapter 6 Contact Forces				
Lesson 1 When Objects Collide	MS-PS2-1	PS2.A	Systems and System Models	Incorporate Engineering Practices
Lesson 2 Forces and Motion	MS-PS2-2	PS2.A	Stability and Change	
Lesson 3 Describing Motion and Position	MS-PS2-2	PS2.A	Stability and Change	
Chapter 7 Fundamental Forces				
Lesson 1 Forces at a Distance	MS-PS2-5	PS2.B	Cause and Effect	
Lesson 2 Electromagnetic Forces	MS-PS2-3	PS2.B	Cause and Effect	
Lesson 3 Gravitational Forces	MS-PS2-4	PS2.B	Systems and System Models	
Chapter 8 Waves				
Lesson 1 Waves	MS-PS4-1	PS4.A	Patterns; Structure and Function	
Lesson 2 Properties of Waves	MS-PS4-2	PS4.A	Structure and Function	
Lesson 3 Light and Sound	MS-PS4-2	PS4.A	Structure and Function	
Chapter 9 Earth: Maps and Movements				
Lesson 1 Mapping Earth	MS-ESS2-3	ESS2.B	Scale, Proportion, and Quantity; Stability and Change	Analyzing and Interpreting Data
Lesson 2 Changes Over Time	MS-ESS2-3	ESS2.B	Scale, Proportion, and Quantity; Stability and Change	Analyzing and Interpreting Data
Lesson 3 Plate Tectonics	MS-ESS2-3	ESS2.B	Scale, Proportion, and Quantity; Stability and Change	Analyzing and Interpreting Data
Chapter 10 Water and the Processes of Earth's Surface				
Lesson 1 Water's Movements	MS-ESS2-2	ESS2.C	Scale, Proportion, and Quantity	Constructing Explanations and Designing Solutions
Lesson 2 Weathering, Erosion, and Time	MS-ESS2-2	ESS2.C	Scale, Proportion, and Quantity	Constructing Explanations and Designing Solutions
Lesson 3 Water Through Earth's Systems	MS-ESS2-4	ESS2.C	Energy and Matter	Developing and Using Models
Lesson 4 Patterns in Water's Movement	MS-ESS2-5	ESS2.C	Energy and Matter	Planning and Carry Out Investigations
Lesson 5 Water Patterns and Weather	MS-ESS2-5	ESS2.C	Energy and Matter	Planning and Carry Out Investigations
Lesson 6 Ocean Currents	MS-ESS2-6	ESS2.C	Energy and Matter	Planning and Carry Out Investigations

Philosophy

Alpha Science is an integrated science program encompassing earth, life, and physical science as prescribed by NGSS. Alpha Science includes adequate rigor; inquiry learning; real-world context; career connections; integration of DCI, CCC, and SEP of NGSS; and opportunities for problem-solving, analytical thinking, making sense of phenomena, and designing solutions. Lessons and units fully integrate NGSS 3D design in student learning, teaching, and assessment. Lessons and units exemplify *coherence*; they fit together in a clear narrative thread that links multiple science domains with each lesson and unit, clearly building on the previous content. Support for the development of coherence will be provided in the Scope and Sequence as well as a comprehensive checklist, showing alignment based on the EQuIP Rubric for Science.

Alpha Science was written taking into account modesty and the religious beliefs and customs of students in the MENA region. The series is written for the region but has a world focus. This series incorporates a mixture of names and features from all regions of the world.

Lessons and chapters are clearly mapped and correlated to skills, DOK, rigor, and assessment boundaries, and they are aligned to CCSS mathematics and ELA standards.

Three Dimensions of Science

Dimension	Categories/Classifications
Dimension 1: 8 Practices	Asking Questions (for Science) and Defining Problems (for Engineering) Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data Using Mathematics and Computational Thinking Constructing Explanations (for Science) and Designing Solutions (for Engineering) Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information
Dimension 2: Crosscutting Concepts	Patterns Cause and Effect: Mechanism and Explanation Scale, Proportion and Quantity Systems and System Models Energy and Matter: Flows, Cycles, and Conservation Structure and Function Stability and Change
Dimension 3: 4 Disciplinary Core Ideas	Physical Sciences Life Sciences Earth and Space Sciences Engineering, Technology, and Applications of Science

Source: http://www.nextgenscience.org

NGSS Performance Expectations for Grade 6 Alpha Science

The Next Generation Science Standards are middle school standards covered within the span of Grades 6, 7, and 8. This chart contains the Disciplinary Core Ideas covered in Grade 6 with links for more information.

Performance Expectation Content Head	Disciplinary Core Idea	NGSS Link for More Information
MS-PS1 Matter and Its Interactions	PS1.A PS1.B	https://ngss.sdcoe.net/Disciplinary-Core-Ideas/DCI-Physical-Sciences
MS-PS2 Motion and Stability: Forces and Interactions	PS2.A PS2.B	
MS-PS3 Energy	PS3.A PS3.B	
MS-PS4 Waves and Their Applications in Technologies for Information Transfer	PS4.A	
MS-LS2 Ecosystems: Interactions, Energy, and Dynamics	LS2.A	https://ngss.sdcoe.net/Disciplinary-Core-Ideas/DCI-Life-Sciences
MS-ESS1 Earth's Place in the Universe	ESS1.B	https://ngss.sdcoe.net/Disciplinary-Core-Ideas/DCI-Earth-and-Space-Sciences
MS-ESS2 Earth's Systems	ESS2.B ESS2.C	
MS-ESS3 Earth and Human Activity	ESS3.A	
MS-ETS1 Engineering, Technology, and Application of Science	ETS1.A ETS1.B	