6th Grade Science YAG

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Year-at-a-Glance

This Year-At-A-Glance document is intended to provide chunks, in a logical and progressive manner, of what is expected for students to know and be able to do over the course of a year. It serves as a suggested timeline for planning, but the focus remains on the learner and should not be viewed as a coverage of content. Through ongoing monitoring of student progress, adjustments need to be made to provide students the necessary supports in order to reach the year-end learning goals.

Definitions

Priority Standards: Priority standards are essential learning goals guaranteed for all students. They form the foundation of a viable curriculum—one that ensures sufficient time and opportunity for students to demonstrate mastery by the end of the academic year.

Unit Standards: Students must show progress towards proficiency standards. They work in tandem with the priority standards and are woven into those targeted in the units.

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HONORS SCIENCE COURSE SUPPLEMENT

Quarter Addressed	Unit of Study	Oklahoma Academic Standards		Unit Resources
		Priority	Unit	
1st Quarter (41 days)	**Unit 1A** Science Safety "What does it mean to make sense of the natural and designed world in a safe manner?" *3 Days: 8/13-8/15*			
	Unit 1B Kinetic Energy as Temperature and Waves "How can containers keep stuff from warming up or cooling down?" *38 Days: 8/18-10/10*	6.PS1.4 6.PS3.4 6.PS4.2	6.PS1.4 6.PS3.3 6.PS3.4 6.PS4.2	**Inspire Science: Modules 1, 2, 3** Core Lab: Make a Thermos Supporting OpenSciEd Unit: 6.2 Thermal Energy
2nd Quarter (39 days)	**Unit 2A** Earth Systems and Interactions "Why does a lot of hail, rain, or snow fall at some times and not others?"	6.ESS2.5 6.ESS2.6	6.ESS2.4 6.ESS2.5 6.ESS2.6 6.ESS3.2	**Inspire Science: Modules 8, 9, 10** Core Lab: Run Through the Hot Sand and Jump Into the Cool Water

	39 Days: 10/20-12/19			Supporting OpenSciEd Unit: 6.3 Weather, Climate & Water Cycling
3rd Quarter (46 days)	**Unit 3A** Molecules to Organisms: Structures and Processes "How do living things heal?" *46 Days: 1/6-3/13*	6.LS1.1 6.LS1.2 6.LS1.3	6.LS1.1 6.LS1.2 6.LS1.3 6.LS1.8	**Inspire Science: Module 5** Core Lab: Hey, Did You Feel That? Supporting OpenSciEd Unit: 6.6 Cells & Systems
4th Quarter (42 days)	**Unit 4A** Energy Flow and Geoscience Processes "What causes Earth's surface to change?" *42 Days: 3/24-5/21*	6.ESS2.1 6.ESS2.3	6.ESS1.4 6.ESS2.1 6.ESS2.2 6.ESS2.3	**Inspire Science: Modules 6, 7** Core Lab: Let It Sink In! Supporting OpenSciEd Unit: 6.4 Plate Tectonics & Rock Cycling

6th Grade Honors Science Supplement

This Honors Science Supplement supports the extension of core science instruction into honors-level learning experiences that prepare students for advanced coursework such as AP and concurrent enrollment. Leveraging the OpenSciEd instructional model, this supplement is grounded in the Anchored Inquiry and Next Generation Storylines approaches that promote coherence, sensemaking, and equitable access to rigorous science learning. It aligns with the Oklahoma Academic Standards for Science and identifies opportunities to integrate high school performance expectations into middle school units, ensuring a coherent and challenging progression of learning.

Unit 1B – Thermal Energy & Particle Motion

Anchoring Question: How can containers keep stuff from warming up or cooling down?

Quarter: Q1

Instructional Days: 33 (Aug 18 – Oct 4)

Core Unit: OpenSciEd 6.2: Thermal Energy

Grade-Level Standards: 6.PS1.4, 6.PS3.3

HS PE Extensions: PS.PS3.4

High School Standard Extensions:

HS PE Code	Full Performance Expectation	Conceptual Link to 6th Grade DCI/CCC	Instructional Notes
PS.PS3.4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy between components in a closed system results in a more uniform energy distribution.	Extends 6.PS3.3 to encompass the 2nd Law of Thermodynamics	Model energy movement in closed systems and design fair tests for insulation effectiveness.

Conceptual Focus:

- - Thermal energy moves from hotter to cooler objects
- - Closed systems reach thermal equilibrium
- - Particle motion models support energy tracking

Honors Extension Strategies by Standard:

- 6.PS3.3 → PS.PS3.4 → Use closed system models to explain energy distribution and equilibrium.
- 6.PS1.4 → PS.PS3.4 → Use particle motion to justify energy movement in container investigations.

Mathematical & Computational Thinking Opportunities:

- - Use temperature sensors to record energy changes
- - Graph temperature vs. time for different materials
- - Calculate average rates of energy change

Sample Extension Task:

Compare insulation effectiveness of three container designs using digital sensors. Justify which best limits energy transfer.

Teacher Notes & UDL Considerations:

- - Provide visuals for closed/open systems
- - Use structured lab templates with embedded scaffolds
- - Support multilingual learners with annotated data tables

Unit 2A – Properties of Matter

Anchoring Question: Why do some things stop while others keep going?

Quarter: Q2

Instructional Days: 33 (Oct 17 – Dec 15)

Core Unit: OpenSciEd 6.1: Contact Forces

Grade-Level Standards: 6.PS2.1, 6.PS2.2, 6.PS3.1

HS PE Extensions: PS.PS2.1, PS.PS2.2

High School Standard Extensions:

HS PE Code	Full Performance Expectation	Conceptual Link to 6th Grade DCI/CCC	Instructional Notes
PS.PS2.1	Analyze data to support claims for Newton's 2nd Law of Motion (F=ma).	Extends 6.PS2.1 into algebraic relationships with force, mass, and acceleration	Use simulations and experiments to quantify effects of mass and acceleration.
PS.PS2.2	Use mathematical representations to support claims for Newton's 3rd Law.	Adds quantitative thinking to interaction force pairs	Design experiments to show action-reaction effects using probes or force sensors.

Conceptual Focus:

- - Forces cause changes in motion

- - Equal and opposite forces act in interactions
- - Motion depends on net force and mass

Honors Extension Strategies by Standard:

- 6.PS2.1 → PS.PS2.1 → Use F=ma to solve real-world problems with force and motion.
- 6.PS2.2 → PS.PS2.2 → Apply Newton's 3rd Law to complex systems (multi-object collisions).

Mathematical & Computational Thinking Opportunities:

- - Use F=ma to calculate unknowns
- - Graph force vs. acceleration data
- - Calculate net force and changes in motion

Sample Extension Task:

Plan an investigation comparing carts of different masses pushed with equal force. Analyze acceleration results and justify using Newton's 2nd Law.

Teacher Notes & UDL Considerations:

- - Use analogies to explain force and motion
- - Model equations visually and physically
- - Support ELs with sentence frames for claim-evidence reasoning

Unit 3A – Cells & Systems

Anchoring Question: How do cells contribute to the function of living organisms?

Quarter: Q3

Instructional Days: 34 (Jan 3 – Feb 29)

Core Unit: OpenSciEd 6.3: Systems & Cells

Grade-Level Standards: 6.LS1.1, 6.LS1.2

HS PE Extensions: B.LS1.1, B.LS1.2

High School Standard Extensions:

HS PE Code	Full Performance Expectation	Conceptual Link to 6th Grade DCI/CCC	Instructional Notes
B.LS1.1	Construct explanations of structure-function relationships in multicellular organisms.	Builds on 6.LS1.1 to emphasize system roles of specialized cells	Model how cells form tissues and organs with specific functions.

B.LS1.2	Develop models of body systems interactions to maintain homeostasis.	Extends 6.LS1.2 into organ system coordination	Compare organ system inputs/outputs to cellular processes.

Conceptual Focus:

- - Cells are the building blocks of all living things
- - Specialized cells form systems with specific functions
- - Organ systems interact to maintain health

Honors Extension Strategies by Standard:

- 6.LS1.1 → B.LS1.1 → Compare cell structures across kingdoms to understand function.
- 6.LS1.2 → B.LS1.2 → Model how organ systems coordinate to respond to changes (feedback).

Mathematical & Computational Thinking Opportunities:

- - Scale comparisons of cell sizes
- - Organize system inputs/outputs in tables
- - Diagram homeostasis feedback loops

Sample Extension Task:

Create a model showing how multiple organ systems interact to help an organism respond to physical activity.

Teacher Notes & UDL Considerations:

- - Use labeled diagrams and video models
- - Support student discussion of inputs and responses
- - Use metaphors like factory or transportation networks

Unit 4A – Earth in Space

Anchoring Question: Why does the Sun rise and set, and how do seasons happen?

Quarter: Q4

Instructional Days: 34 (Mar 4 – May 21)

Core Unit: OpenSciEd 6.4: Earth-Sun-Moon System

Grade-Level Standards: 6.ESS1.1, 6.ESS1.2

HS PE Extensions: ESS1.4

High School Standard Extensions:

HS PE Code	Full Performance Expectation	Conceptual Link to 6th Grade DCI/CCC	Instructional Notes

ESS1.4	Use mathematical or computational models to predict motion in the solar system.	Extends 6.ESS1.1 into orbital dynamics and scale modeling	Model the orbits of Earth, Moon, and other planets to explain eclipses and gravity.

Conceptual Focus:

- - The Earth's rotation causes day and night
- - The Earth's orbit and tilt cause seasonal changes
- - The Moon's phases follow predictable patterns

Honors Extension Strategies by Standard:

- 6.ESS1.1 → ESS1.4 → Use models to explain and predict solar/lunar eclipses and gravity effects.
- 6.ESS1.2 → ESS1.4 → Scale and simulate motion of Earth-Moon-Sun system.

Mathematical & Computational Thinking Opportunities:

- - Scale solar system distances
- - Simulate rotation and revolution in graphs or animations
- - Use geometry to describe eclipse angles

Sample Extension Task:

Create a scaled model showing Earth's orbit and tilt. Predict the location of eclipses based on alignment.

Teacher Notes & UDL Considerations:

- - Use hands-on models and simulations
- - Preteach spatial terms (rotate, revolve, tilt)
- - Incorporate EL supports like labeled visuals and timelines