**NGSS and the Arkansas K-12 Science Standards**

New Courses for the 2018-19 School Year

* Physical Science – Integrated (2016)
* Biology – Integrated (2016)
* Chemistry – Integrated (2016)
* Physics (2005 or 2016) Full implementation of Physics 2016 is expected in the 2019-20 school year

Other Options for Science Credit

* Astronomy
* Earth Science
* Environmental Science
* Human Anatomy and Physiology

**Arkansas Standards**

* **Performance Expectations** are learning goals for the students
* **Three Dimensional Learning**

1. Science and Engineering Practices
2. Disciplinary Core Idea
3. Crosscutting Concepts

**Performance Expectation**

***Topic 1: Cycling of Mater and Energy***

*Students who demonstrate and understanding can:*

***BI-LS1-5*** *Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. [AR Clarification statement: This PE is fully addressed in this course. Emphasis is on illustrating inputs and outputs of matter and the transfer and transformation of energy in photosynthesis by plants and other photosynthesizing organisms. Examples of models could include diagrams, chemical equations, and conceptual models.] Assessment Boundary: Assessment does not include specific biochemical steps.]*

1. **Science and Engineering Practices**

* Practices describe behaviors that scientist and engineers engage in as they solve problems
* 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

***Developing and Using Models***

*Use a model based on evidence to illustrate the relationships between systems or between components of a system.*

1. **Disciplinary Core Ideas**

* Focus the K-12 science curriculum, instruction, and assessments on the most important aspects
* Have a far reaching importance across the sciences and engineering disciplines
* Relate to student’s prior knowledge and become more complex with each grade level
* Grounded in four domains: life sciences, physical sciences, earth sciences, engineering technology and technology sciences

***LS1.C: Organization for Matter and Energy Flow in Organisms***

***The process of photosynthesis converts light energy to stored chemical energy by converting carbon dioxide plus water into sugars plus released oxygen.***

1. **Crosscutting Concepts**

* Have application across all domains of science
* Patterns
* Cause and effect
* Scale, proportion, and quantity
* Systems and system models
* Energy and matter
* Structure and function
* Stability and change
* Progress from grade to grade

***Energy and Matter***

*Changes of energy and matter in system can be described in terms of energy and matter flows into, out of,*

*and within that system.*

Grasping Phenomenal Scence