

# Course Syllabus

## Science, Science Grade 5

Morgan County Curriculum 4.1 Elementary., Final  
Morgan County School District

### Physical Science (25%)

- 1.1.1 (DOK 2) ASSESSED  
The learner will be able to describe the physical properties of substance like boiling point, solubility, density and they will understand that a substance has characteristic physical properties like properties point and solubility that are independent of the amount of the sample.
- 1.2.1 (DOK 3) ASSESSED  
The learner will be able to interpret data in order to make qualitative (fast, slow, forward, backward) and quantitative descriptions and predictions about the straight-line motion of an object and understand that the motion of an object can be described by its relative position, direction of motion and speed. Students will understand that motion can be measured and represented on a graph.
- 1.2.2 Supporting  
The learner will be able to understand that forces are pushes and pulls and that these pushes and pulls may be invisible like gravity and magnetism or visible like friction and collisions.

### Earth and Space Science

- 2.3.1 (DOK 2) ASSESSED  
The learner will be able to describe the circulation of water (evaporation and condensation) from the surface of the Earth, describe the crust, oceans, and atmosphere and explain how matter is conserved in this cycle---water cycle.
- 2.3.2 (DOK 3) ASSESSED  
The learner will be able to students will explain the interactions of water with Earth materials and results of those interactions (like dissolving minerals, moving minerals and gases. Water dissolves minerals and gases and may carry them to the oceans.
- 2.3.3 (DOK 3) ASSESSED  
The learner will be able to describe Earth's atmosphere as a relatively thin blanket of air consisting of a mixture of nitrogen, oxygen and trace gases, including water vapor; analyze atmospheric data in order to draw

conclusions about real life phenomena related to atmospheric changes and conditions. Earth is surrounded by a relatively thin blanket of air called the atmosphere. The atmosphere is a mixture of nitrogen, oxygen and trace gases that include water vapor. The atmosphere has different properties at different elevations. Conclusions based on the interpretation of properties data can be used to explain real life properties like pressured cabins in airplanes, mountain-climber's need for oxygen.

- 2.3.4 (DOK 3) ASSESSED  
The learner will be able to analyze global patterns of atmospheric movement and explain the basic relationships of patterns of atmospheric movement to local weather. Global patterns of atmospheric movement can be observed and/or analyzed by interpreting patterns within data. Atmospheric movements influence local weather. Oceans have a major effect on climate, because water in the oceans holds a large amount of heat. Related data can be used to predict change in weather and climate.
- 2.3.5 (DOK 2) ASSESSED  
The learner will be able to compare components of our solar system including using models/representations that illustrate the system and resulting interactions. Earth is the third planet from the Sun in a system that includes the moon, the Sun, eight other planets and their moons, smaller objects. The Sun, an average star, is the central and largest body in the solar system. Models/diagrams provide understanding of scale within the solar system.

### Biological Science (20%)

- 3.4.1 (DOK 2) ASSESSED  
The learner will be able to describe and compare living systems to understand the complementary nature of structure and function. Observations and comparisons of living systems at all levels of organization systems he systems nature of structure and function. Important levels of organization for structure and function include cells, tissues, organs, organ systems, systems (e.g., bacteria, protists, fungi, plants, animals), and systems. Examining the relationship between structure and

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function provides a basis for comparisons and classification schemes.

### ■ 3.4.2 (DOK 2) ASSESSED

The learner will be able to explain the essential functions of cells necessary to sustain life. Cells carry on the many functions needed to sustain life. Models of cells, both physical and functions, promote understanding of their structures and functions. Cells grow and divide, thereby producing more functions. This requires that they take in nutrients, which provide energy for the work that cells do and make the materials that a cell needs.

### ■ 3.4.3 Supporting

The learner will be able to understand that ALL organisms are composed of cells, the fundamental unit of life. Most organisms are single cells; other organisms, including plants and animals are multicellular.

### ■ 3.5.1 (DOK 2) ASSESSED

The learner will be able to describe cause and effect relationships between enhanced survival/reproductive success and particular biological adaptations (e.g., changes in structures, behaviors, and/or physiology) to generalize about the diversity of species. Biological change over time accounts for the diversity of species developed through gradual processes over many generations. Examining cause and effect relationships between enhanced survival/reproductive between and between adaptations (e.g., changes in structures, behaviors, and/or physiology, based on evidence gathered, creates the basis for explaining diversity.

### ■ 3.5.2 Supporting

The learner will be able to understand that all organisms must be able to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing constantly environment.

<b>Unifying concepts (20%)</b>
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### ■ 4.6.1 (DOK 2) ASSESSED

The learner will be able to classify energy phenomena as kinetic or potential; and describe the transfer of energy occurring in simple systems or related data. Energy can be classified as kinetic or potential. Energy is a property of many substances and energy can be found in several different forms. For example, chemical energy as found in food we eat or in the gasoline we burn in our car. Heat, light (solar), sound, electrical energy and the energy associated with motion (called kinetic energy) are examples of other forms of energy. Objects can have energy simply by virtue of their position, called potential energy. Energy is transferred in many ways. Analyzing simple systems can provide the basis for describing the transfer of energy occurring within the system.

### ■ 4.6.2 Supporting

The learner will be able to understand that the Sun is a major source of energy for changes on Earth's surface. The Sun loses energy by emitting light. A tiny fraction of that light reaches Earth, transferring energy from the Sun to Earth.

### ■ 4.6.3 (DOK 3) ASSESSED

The learner will be able to draw conclusions about the transfer of energy within models/representations of electrical circuits as evidenced by the heat, light, sound, and magnetic effects that are produced; and describe changes within the system that would affect the transfer of energy. Electrical circuits provide a means of transferring electrical energy. This transfer can be observed and described as heat, light, sound, and magnetic effects are produced. Models and diagrams can be used to support conclusions and predict consequences of change within an electrical circuit.

### ■ 4.6.4 (DOK 3) ASSESSED

The learner will be able to identify predictable patterns and make generalizations about light and matter interactions using data/evidence. Light energy interacts with matter by transmission (including refraction), absorption, or scattering (including reflection). Questions related to these phenomena

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should drive the design of simple investigations that will yield evidence of the predictable patterns associated with these interactions.

### ■ 4.6.5 Supporting

The learner will be able to understand that heat energy moves in predictable ways, flowing from warmer objects to cooler ones, until both objects reach the same temperature. By examining cause and effect relationships, consequences of heat movement and conduction can be predicted and inferred.

### ■ 4.7.1 (DOK 3) ASSESSED

The learner will be able to describe and categorize populations of organisms according to the function they serve in an ecosystem such as producers, consumers and decomposers; and the learner will draw conclusions about the effects of changes to populations in an ecosystem. Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some microorganisms are producers because they make their own food. All animals, including humans, are consumers, and obtain their food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify the relationships among producers, consumers, and decomposers in an ecosystem. Using data gained from observing interacting components within an ecosystem, the effects of changes can be predicted.

### ■ 4.7.2 Supporting

The learner will be able to understand that a population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.