

**GRADE SIX****A. INQUIRY SKILLS****Students will design and conduct scientific investigations**

- Identify questions that can be answered through scientific investigations
- Use appropriate tools, technology, and techniques to gather, analyze, and interpret data
- Organize and maintain a journal showing procedures and results of investigations
- Develop descriptions, explanations, predictions, and models using evidence
- Use mathematics in scientific inquiry
- Construct logical relationships between evidence and explanations
- Recognize and analyze alternative explanations and predictions
- Use fair testing procedures

**Students will communicate scientific procedures and explanations**

- Demonstrate effective methods to organize and display science data and concepts
- Present investigative results to others verbally, graphically, and in writing
- Communicate accurately and clearly about science concepts, using scientific vocabulary

**B. PHYSICAL SCIENCE****Students will apply the principles of motion and forces**

- Design and conduct investigations to calculate the speed (rate of travel) of moving objects
- Explain how changes of position over time determines the speed of moving objects
- Demonstrate how objects have potential and/or kinetic energy
- Compare the interactions of balanced and unbalanced forces, action and reaction

**Students will explain the transfer of energy**

- Demonstrate how energy is transferred (examples: electrical energy to mechanical energy, mechanical energy to electrical energy)
- Construct both series and parallel circuits and trace the flow of electrical energy through each
- Describe how electrical energy is transferred to produce heat, light, sound, mechanical and chemical energy (examples: dry cell battery, electroplating, nickel-cadmium rechargeable battery)

## GRADE SIX

### C. LIFE SCIENCE

#### **Students will analyze the relationship between structure and function**

- Compare the cellular, tissue, organ, and system organizations of animals and plants
- Explain the structures and functions of the circulatory and respiratory systems

#### **Students will explain reproduction and heredity**

- Compare asexual and sexual reproduction
- Describe human reproduction and the development of the fetus
- Compare traits that are inherited with traits that are learned

#### **Students will explain how populations relate to ecosystems**

- Identify the energy relationships between producers, consumers, and decomposers in an ecosystem
- Describe ways that different species respond to each other within the same ecosystem
- Compare organisms that perform the same function in different ecosystems

#### **Students will describe the diversity and adaptations of organisms within an ecosystem**

- Explain theories for the extinction of organisms
- Describe how environmental changes may cause endangerment and extinction
- Explain adaptive characteristics of species determine their chance for survival or possible extinction
- Defend the argument that most species that once lived on earth no longer exist
- Investigate modern day efforts to prevent the extinction of plants and animals

### D. EARTH AND SPACE SCIENCE

#### **Students will understand structures of the Earth system**

- Design and construct a model to explain the water cycle
- Differentiate between weather and climate
- Explain the importance of the oceans in forming weather patterns and how this affects climate

**GRADE SIX****Students will explain the Earth's position in the solar system**

- Create a 3 dimensional model to demonstrate the relationships of Earth to the sun and moon
- Infer that the angle of the sun's rays is responsible for temperature changes during the seasons
- Describe objects that enter the solar system from the outside (examples: comets, meteorites, micrometeorites)
- Explain solar and lunar eclipses

**E. SCIENCE AND TECHNOLOGY****Students will demonstrate ability in technological design**

- Identify products or examples of technology that are commonly used
- Design and conduct a product test using clearly stated criteria
- Based on evaluations, determine ways to improve the product test design
- Communicate the methods and procedures used for the product test

**Students will explain why science and technology are interdependent**

- Describe how technology is constantly changing (examples: computers, medical equipment, automobiles)
- Compare the intended benefits and unintended consequences of a technology

**F. SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES****Students will practice safety**

- Demonstrate personal and group safety when engaged in science activities
- Demonstrate the safe use of electricity in the home and school
- Describe safety precautions needed during natural hazards (examples: fires, earthquakes, electrical storms, and tornadoes)

**Students will evaluate risks and benefits**

- Evaluate the risks, costs, and benefits of human decisions related to natural hazards

## GRADE SIX

(examples: fires, earthquakes, floods, and tornadoes)

- Investigate how students' actions could have an impact on world environmental concerns

### G. HISTORY AND NATURE OF SCIENCE

#### **Students will understand that science is a human endeavor**

- Identify contributions of individuals from other cultures who have contributed to knowledge in science, technology, and engineering
- Determine types of educational choices required for science and technology careers

#### **Students will understand the nature of scientific work and the cooperation between scientists**

- Describe methods that scientists use to formulate and test their explanations
- Cite examples of scientists who have used new evidence to make modifications on existing explanations
- Describe the roles of scientists who have worked in teams to solve a problem or make a scientific discovery (examples: space shuttle team, atomic energy, DNA)
- Explain how scientists communicate the results of their work

#### **Students will describe events in the history of science**

- Describe the work of scientists whose discoveries were ahead of their day
- Describe the scientific contributions of ancient societies (examples: Egyptians, Chinese, and Arabs)