SCIENCE Seventh Grade

VALUES AND ATTITUDES	The student will: Understand that our nurturing Earth is a reflection of God's love for His creations. Understand that the Earth is dynamic and resilient, yet fragile and finite. Appreciate the order of the physical world. Understand some of the connections between elements of the physical world. Use math sentences to describe observations. Understand that careful collection and comparison of information is important in advancing science. Recognize that limiting the scope of initial investigations is important.

STANDARD A Life Science

OBJECTIVES

The following topics are recommended for Grade 7.

- Analyze life requirements of living things.
- Identify the cell as the basic unit of living organisms.
- Distinguish between single celled and multi-celled organisms.
- Analyze structures, functions, and processes within plant and animal cells.
- Define mitosis and observe individual stages.
- Compare life functions of Protists.
- Analyze human body systems.
- Relate disease to biological hazards.
- Investigate Mendel's principles of heredity.
- Explain the significance of DNA, genes, and chromosomes in cell reproduction.
- Explain the relationship of DNA, genes and chromosomes to inherited traits.
- Determine the role of probability in the study of heredity.
- Explain the sorting and recombination of parents' genetic material that produces potential variation among offspring.
- Explain the genetic transmittance of disease.
- Analyze the ethical and scientific issues raised in biomedical research.
- Investigate the moral issues of current research in human genetics.

STANDARD B Earth Science

OBJECTIVES

The following topics are recommended for 7th grade.

Geology, Meteorology, Astronomy, and Oceanography

- Explain earth's atmosphere including structure, composition and properties.
- Identify the atmospheric characteristics that nurture life on earth.

- Analyze the properties that can be observed and measured to predict air quality.
- Identify *weather* as the short-term atmospheric factors that affect a region.
- List the factors that affect weather conditions as: air pressure, wind movement, temperature, and the amount of moisture in the air.
- Recognize that changes in the amount of solar radiation an area receives will cause changes in temperature, air movement, and precipitation.
- Describe and identify prevailing wind direction at different latitudes.
- Examine evidence that atmospheric properties can be studied to predict atmospheric conditions and weather hazards.
- Identify *climate* as the characteristic weather patterns that occur in a region over a period of many years.
- Identify evidences that climate conditions on earth have changed during geological time.
- Evaluate the impact of human activities on the atmosphere.
- Evaluate the use of technology to predict, monitor, and record atmospheric phenomena.

STANDARD C Physical Science

OBJECTIVES

The following topics are recommended for 7th grade.

- Classify substances based on their properties.
- Describe the internal structure of the atom.
- Describe the historical development of the *Atomic Theory.*
- Use the Atomic Theory to explain the behavior of elements.
- Examine the nature of the bonds that form between atoms when compounds form.
- Relate matter to the arrangement and motion of atoms or molecules.
- Analyze the suitability of materials for use in technological design.
- Classify objects based on specific characteristics.
- Contrast physical change to chemical change.
- Describe and measure quantities related to chemical/physical changes within a system.
- Assess data to support the law of conservation of matter.

STRAND D Nature of Science

OBJECTIVES

Science process skills

- Develop habits of careful observation.
- Select and use appropriate tools and technology to perform tests, collect data, and display data.
- Develop a hypothesis by evaluating observations and known information.
- Identify variables in a data table.
- Construct a data table and record changes in values of two related variables obtained during an investigation.
- Identify graphs as a form of data display and communication.
- Understand why scientists use graphs.
- Interpret data from a bar, circle and line graph and decide which type of graph best displays given data.
- Identify the elements required to construct a line graph from data table obtained in an investigation.
- Understand that measurement is a quantitative observation.
- Relate past experience to a current problem.
- Communicate steps and results from investigation in written reports and oral presentations.
- Recognize different types of questions.
- Recognize whether evidence is consistent with a proposed explanation.
- Develop habits of questioning information that lacks supporting data.
- Write hypothesis and conclusion statements as part of a scientific investigation.
- Write direction statements as part of developing a scientific investigation.
- Write simple sentences and paragraphs describing observations made during investigations using appropriate vocabulary.
- Identify and use chemical symbols.
- Use a variety of print and electronic resources to collect information and evidence for research.
- Compare SI (metric) and English measurements.
- Use mathematical formulas to describe a scientific principle.