COMPONENT	OBJECTIVES	COMPETENCY
I The Nature of Science as Inquiry	1. Identify Questions That Can Be Answered Through Scientific Investigations. Students should develop the ability to refine and refocus broad and ill-defined questions. An important aspect of this ability consists of students' ability to clarify questions and inquiries and direct them toward objects and phenomena that can be described, explained, or predicted by scientific investigations. Students should develop the ability to identify their questions with scientific ideas, concepts, and quantitative relationships that guide investigation. **(SC.H.1.3.2)** 2. Design And Conduct A Scientific Investigation. Students should develop general abilities, such as systematic observation, making accurate measurements, and identifying and controlling variables. They should also develop the ability to clarify their ideas that are influencing and guiding the inquiry, and to understand how those ideas compare with current scientific knowledge. Students can learn to formulate questions, design investigations, execute investigations, interpret data, use evidence to generate explanations, propose alternative explanations, and critique explanations and procedures. 3. Use Appropriate Tools And Techniques To Gather, Analyze, And Interpret Data. The use of tools and techniques, including mathematics, will be guided by the question asked and the investigations students design. The use of computers for the collection, summary, and display of evidence is part of this standard. Students should be able to access, gather, store, retrieve, and organize data, using hardware and software designed for these purposes. 4. Develop Descriptions, Explanations, Predictions, And Models Using Evidence. Students should base their explanation on what they observed, and as they develop cognitive skills, they should be able to differentiate explanation from description - providing causes for effects and establishing relationships based on evidence and logical argument. This standard requires a subject matter knowledge base so the students can effectively conduct investigations because developing explanations establishes connections between the content of science and the contexts within which students develop new knowledge. **(SC.A.1.3.0)**	A. Participate in a variety of activities that develop all students' abilities to: identify scientific questions; design and conduct investigations; use appropriate tools and techniques; compose descriptions, explanations, predictions, and models using evidence; think critically and logically to make the relationships between evidence and explanations; communicate scientific procedures and explanations; and use mathematics in all aspects of scientific inquiry. **(SC.H.1.3.5)**

COMPONENT	OBJECTIVES	COMPETENCY
	5. Think Critically And Logically To Make The Relationships Between Evidence And Explanations. Thinking critically about evidence includes deciding what evidence should be used and accounting for anomalous data. Specifically, students should be able to review data from a simple experiment, summarize the data, and form a logical argument about the cause-and-effect relationships in the experiment. Students should begin to state some explanations in terms of the relationship between two or more variables. **(SC.H.1.3.4)** 6. Recognize And Analyze Alternative Explanations And Predictions. Students should develop the ability to listen to and respect the explanations proposed by other students. They should remain open to and acknowledge different ideas and explanations, be able to accept the skepticism of others, and consider alternative explanations. **(SC.H.1.3.5)** 7. Communicate Scientific Procedures And Explanations. With practice, students should become competent at communicating experimental methods, following instructions, describing observations, summarizing the results of other groups, and telling other students about investigations and explanations. **(SC.H.1.3.4)** 8. Use Mathematics In All Aspects Of Scientific Inquiry. Mathematics is essential to asking and answering questions about the natural world. Mathematics can be used to ask questions; to gather, organize, and present data; and to structure convincing explanations. 9. Recognize that different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models. **(SC.H.1.3.1)**	

COMPONENT	OBJECTIVES	COMPETENCY
	10. Recognize that current scientific knowledge and understanding guide scientific investigations. Different scientific domains employ different methods, core theories, and standards to advance scientific knowledge and understanding. **(SC.H.1.3.2)**	
	1. Recognize that mathematics is important in all aspects of scientific inquiry. 2. Recognize that technology used to gather data enhances accuracy and allows scientists to analyze and quantify results of investigations, and this knowledge and technology can eventually become available to everyone. **(SC.H.3.3.6)** 3. Recognize and apply the ideas that scientific explanations emphasize evidence, have logically consistent arguments, and use scientific principles, models, and theories. The scientific community accepts and uses such explanations until displaced by better scientific ones. When such displacement occurs, science advances. 4. Recognize that science advances through legitimate skepticism. Asking questions and querying other scientists' explanations is part of scientific inquiry. Scientists evaluate the explanations proposed by other scientists by examining evidence, comparing evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations. 5. Recognize and apply the ideas that scientific investigations sometimes result in new ideas and phenomena for study, generate new methods or procedures for an investigation, or develop new technologies to improve the collection of data. All of these results can lead to new investigations.	B. Participate in a variety of activities that develop all students' understandings of the nature of scientific inquiry.

COMPONENT	OBJECTIVES	COMPETENCY
	1. Recognize that women and men of various social and ethnic backgrounds, and with diverse interests, talents, qualities, and motivations, engage in the activities of science, engineering, and related fields such as the health professions. Some scientists work in teams, and some work alone, but all communicate extensively with others. 2. Recognize and consider the ideas that science requires different abilities, depending on such factors as the field of study and type of inquiry. Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill, and creativity - as well as on scientific habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas. 3. Recognize and apply the ideas that scientists formulate and test their explanations of nature using observation, experiments, and theoretical and mathematical models. Although all scientific ideas are tentative and subject to change and improvement in principle, for most major ideas in science, there is much experimental and observational confirmation. Those ideas are not likely to change greatly in the future. Scientists do and have changed their ideas about nature when they encounter new experimental evidence that does not match their existing explanations. 4. Recognize that in areas where active research is being pursued and in which there is not a great deal of experimental or observational evidence and understanding, it is normal for scientists to differ with one another about the interpretation of the evidence or theory being considered. Different scientists might publish conflicting experimental results or might draw different conclusions from the same data. Ideally, scientists acknowledge such conflict and work towards finding evidence that will resolve their disagreement.	C. As a result of activities, all students should develop understanding of science as a human endeavor and the nature and history of science.

COMPONENT	OBJECTIVES	COMPETENCY
	5. Recognize and apply the ideas that it is part of scientific inquiry to evaluate the results of scientific investigations, experiments, observations, theoretical models, and the explanations proposed by other scientists. Evaluation includes reviewing the experimental procedures, examining the evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations. Although scientists may disagree about explanations of phenomena, about interpretations of data, or about the value of rival theories, they do agree that questioning, response to criticism, and open communication are integral to the process of science. As scientific knowledge evolves, major disagreements are eventually resolved through such interactions between scientists. 6. Recognize that many individuals have contributed to the traditions of science. Studying some of these individuals provides further understanding of scientific inquiry, science as a human endeavor, the nature of science, and the relationships between science and society. 7. Recognize that in historical perspective, science has been practiced by different individuals in different cultures. In looking at the history of many peoples, one finds that scientists and engineers of high achievement are considered to be among the most valued contributors to their culture. 8. Describe how tracing the history of science can show how difficult it was for scientific innovators to break through the accepted ideas of their time to reach the conclusions that we currently take for granted. 9. Recognize that special care must be taken in using animals in scientific research and that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate. **(SC.H.3.3.3)**	

COMPONENT	OBJECTIVES	COMPETENCY
II Life Science	1. Describe reproduction as a characteristic of all living systems; because no individual organism lives forever, reproduction is essential to the continuation of every species. Some organisms reproduce asexually. Other organisms reproduce sexually. **(SC.F.2.3.1)** 2. As the result of a study of representative examples, conclude that in many species, including humans, females produce eggs and males produce sperm. Plants also reproduce sexually - the egg and sperm are produced in the flowers of flowering plants. **(SC.F.2.3.1)** 3. As the result of a study of representative examples, conclude that an egg and sperm unite to begin development of a new individual. The new individual receives genetic information from its mother (via the egg) and its father (via the sperm). Sexually produced offspring are never identical to either of their parents. **(SC.G.1.3.2)** 4. Describe heredity as the passage of a set of instructions specifying traits from one generation to another. **(SC.F.2.3.2)** 5. Describe the characteristics of an organism in terms of a combination of traits. Some traits are inherited and others result from interactions with the environment. **(SC.F.2.3.2)** 6. Describe that a human cell contains many thousands of different genes and that each gene carries a single unit of information. An inherited trait of an individual can be determined by one or by many genes, and a single gene can influence more than one trait. **(SC.F.2.3.2)**	A. Describe examples of how reproduction is a characteristic of all living systems; because no individual organism lives forever, reproduction is essential to the continuation of every species. **(SC.F.2.3.0)**

COMPONENT	OBJECTIVES	COMPETENCY
	1. Describe how, although different species might look dissimilar, the unity among organisms becomes apparent from an analysis of internal structures, the similarity of their chemical processes, and the evidence of common ancestry. **(SC.G.1.3.3)** 2. Describe how species acquire many of their unique characteristics through biological adaptation, which involves the selection of naturally occurring variations in populations. **(SC.F.2.3.3)** 3. Describe how biological adaptations, which may include changes in structures, behaviors, or physiology, can enhance survival and reproductive success in a particular environment. **(SC.F.2.3.2)** 4. Demonstrate an understanding of natural selection by providing examples of specific adaptations that aid in survival of the species under changing environmental conditions. **(SC.F.2.4.3)** 5. Describe how fossil records provide evidence that changes in the kinds of plants and animals in the environment have been occurring over time. **(SC.F.2.3.4)**	B. Based upon selected examples, explain how the interaction of environmental changes and adaptations have enhanced the survival of a species or led to the extinction of a species. **(SC.G.1.3.2)**
III Earth and Space Science	1. Describe how water, which covers the majority of the Earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the "water cycle." Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface where it collects in lakes, oceans, soil, and in rocks underground. **(SC.D.1.3.3)** 2 Describe water as a solvent. As it passes through the water cycle it dissolves minerals and gases and carries them to the oceans.	A. Recognize the structure and functions of the Earth's atmosphere and hydrosphere including how they interact and affect changes on the Earth's surface.

COMPONENT	OBJECTIVES	COMPETENCY
	3. Describe how the atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor. The atmosphere has different properties at different elevations. 4. Describe how organisms have played many roles in the earth system including affecting the composition of the atmosphere. **(SC.D.1.3.3)** 5. Describe how clouds are formed by the condensation of water vapor and affect weather and climate. Identify and use instruments to measure weather and interpret a weather map. **(SC.D.1.3.3)** 6. Describe the global patterns of atmospheric movement that influence local weather, and how oceans have a major effect on climate because water in the oceans holds a large amount of heat. **(SC.D.1.3.3)**	
IV Physical Science	1. Recognize that energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical. Energy is transferred in many ways and is used for many things. **(SC.B.1.3.1)** 2. Based on activities and observations, describe how heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature. **(SC.B.1.3.5)** 3. Explain that temperature measures the average energy of motion of the particles that make up a substance. **(SC.A.1.3.3)** 4. Describe the generation, properties, and movement of energy by various types of waves. Show understanding that vibrations in materials set up wave disturbances that spread away from the source(e.g. sound and earthquake waves). **(SC.C.1.3.2)**	A. Describe examples of the transfer of energy by heat, light, electricity, mechanical motion, sound, nuclei, and chemical reactions. **(SC.B.1.3.0)**

COMPONENT	OBJECTIVES	COMPETENCY
	5. Explain the interaction of light with matter by describing transmission (including refraction), absorption, or scattering (including reflection). To see an object, light from that object, emitted by or scattered from it, must enter the eye. **(SC.B.1.3.6)** 6. Describe that electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced. **(SC.B.1.3.2)** 7. Describe how, in most chemical and nuclear reactions, energy is transferred into or out of a system. Heat, light, mechanical motion, or electricity might all be involved in such transfers which are never 100% efficient. **(SC.B.1.3.4)**	
V The Interaction of Society and the Environment	1. Describe some of the risks associated with natural hazards (floods, tornadoes, and hurricanes). 2. Through research, describe global, regional, or local problems and propose solutions to correct those problems (global warming, ozone depletion, air and water quality, toxins, heavy metals, etc.). **(SC.G.2.3.4)** 3. Investigate how most of the energy used today is derived from burning stored energy collected by organisms millions of years ago (i.e., nonrenewable fossil fuels). **(SC.B.2.3.2)** 4. Recognize and explain why individuals may have to sacrifice some conveniences for the good of the world. (global warming, ozone depletion, acid rain) 5. Address recycling by conducting investigations in the 4R's recycling curriculum (reduce, reuse, recover, recycle). **(SC.D.2.3.1)**	A. Make decisions based on an understanding of the interrelationships of living things and their environment to solve existing and potential problems in the biosphere. **(SC.G.2.3.2)**

COMPONENT	OBJECTIVES	COMPETENCY
VI Science and Technology Design	1. Identify Appropriate Problems for Technological Design. Demonstrate abilities by identifying a specified need, considering its various aspects, and talking to different potential users or beneficiaries, accounting for some needs, the cultural backgrounds and beliefs of different groups can affect the criteria for a suitable product. **(SC.H.3.3.5)** 2. Design A Solution Or Product. Make and compare different proposals in the light of selected criteria and consider constraints - such as cost, time, tradeoffs, and materials needed-and communicate ideas with drawings and simple models. **(SC.H.3.3.5)** 3. Implement A Proposed Design. Organize materials and other resources, plan the work, make good use of group collaboration where appropriate, choose suitable tools and techniques, and work with appropriate measurement methods to ensure adequate accuracy. **(SC.H.3.3.5)** 4. Evaluate Completed Technological Designs Or Products. Use criteria relevant to the original purpose or need, consider a variety of factors that might affect acceptability and suitability for intended users or beneficiaries, and develop measures of quality with respect to such criteria and factors. Suggest improvements and, for the products, try proposed modifications. **(SC.H.3.3.5)** 5. Communicate The Process Of Technological Design. Review and describe any completed piece of work and identify the stages of problem identification, solution design, implementation, and evaluation. **(SC.H.3.3.5)** 6. Recognize that technological designs have constraints, are not perfect, have intended benefits and unintended consequences. **(SC.H.3.3.5)**	A. Collaboratively design and carry out a technology plan that is a solution or a product to an identified problem and communicate the results of the project. **(SC.H.3.3.5)**

COMPONENT	OBJECTIVES	COMPETENCY
VII Comprehensive Health	1. Recognize that regular exercise is important to the maintenance and improvement of health. The benefits of physical fitness include maintaining healthy weight, having energy and strength for routine activities, good muscle tone, bone strength, strong heart/lung systems, and improved mental health. Personal exercise, especially developing cardiovascular endurance, is the foundation of physical fitness. 2. Recognize and apply the ideas that the potential for accidents and the existence of hazards imposes the need for injury prevention. Safe living involves the development and use of safety precautions and the recognition of risk in personal decisions. Injury prevention has personal and social dimensions. 3. Recognize that the use of tobacco increases the risk of illness. Students should understand the influence of short-term social and psychological factors that lead to tobacco use, and the possible long-term detrimental effects of smoking and chewing tobacco. 4. Recognize that alcohol and other drugs are often abused substances. Such drugs change how the body functions and can lead to addiction. Food provides energy and nutrients for growth and development. Nutrition requirements vary with body weight, age, sex, activity, and body functioning. 5. Recognize that the sex drive is a natural human function that requires understanding. Sex is also a prominent means of transmitting diseases. The diseases can be prevented through a variety of precautions. 6. Recognize that natural environments may contain substances (for example, radon and lead) that are harmful to human beings. Maintaining environmental health involves establishing or monitoring quality standards related to use of soil, water, and air.	A. After utilizing the appropriate components of the Human Growth and Development, Health, Prevention of HIV/AIDS, and Substance Abuse Curriculums, the student will develop and promote a healthy lifestyle.