PLANNED COURSE

SUBJECT AREA: Science and Technology **GRADE/COURSE:** 4

Standard And Strand 3.1 Unifying Themes

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Know that natural and human-made objects are made up of parts.	1. Identify and describe what parts make up a system. 2. Identify system parts that are natural and human made (e.g., ball point pen, simple electrical circuits, plant anatomy) 3. Describe the purpose of analyzing systems. 4. Know that technologies include physical technology systems (e.g. construction, manufacturing, transportation), informational systems and biochemical related systems.	Teacher observation Tests Models Diagrams ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
B. Know models as useful simplifications of objects or processes.	1. Identify different types of models. 2. Identify and apply models as tools for prediction and insight. 3. Apply appropriate simple modeling tools and techniques. 4. Identify theories that serve as models (e.g., molecules)	
C. Illustrate patterns that regularly occur in nature.	1. Identify observable patterns (e.g., growth patterns in plants, crystal shapes on minerals, climate, structural patterns in bird feathers). 2. Use knowledge of natural patterns to predict next occurrence (e.g. seasons, leaf patterns, lunar phases).	Diagrams Models Teacher observation Booklets

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
D. Know that scale is an important attribute of natural and human made objects, events and phenomena.	1. Identify the use of scale as it relates to the measurement of distance, volume and mass. 2. Describe scale as a ratio (e.g. map scales) 3. Explain the importance of scale in producing models and apply it to a model.	Models Maps Diagrams
E. Recognize change in natural and physical systems.	1. Recognize change as fundamental to science and technology concepts. 2. Examine and explain change by using time and measurement. 3. Describe relative motion. 4. Describe the change to objects caused by heat , cold, light or chemicals.	Diagrams Booklets ***More specific assessments will be designed upon purchase of new science materials.**

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Standard And Strand 3.2 Inquiry and Design

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Identify and use the nature of scientific and technological knowledge.	1. Distinguish between a scientific fact and a belief. 2. Provide clear explanations that account for observations and results. 3. Relate how new information can change existing perceptions.	Experiments Observations Classroom discussions Written reports ***More specific assessments will be designed upon purchase of new science materials.**
B. Describe objects in the world using the five senses.	1. Recognize observational descriptions from each of the five senses (e.g. see- blue, feel-rough). 2. Use observations to develop a descriptive vocabulary.	

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
C. Recognize and use the elements of scientific inquiry to solve problems.	1. Generate questions about objects, organisms and/or events that can be answered through scientific investigations. 2. Design an investigation. 3. Conduct an experiment. 4. State a conclusion that is consistent with the information.	Activities Observations Tests Quizzes
D. Recognize and use the technological design process to solve problems.	1. Recognize and explain basic problems. 2. Identify possible solutions and their course of action. 3. Try a solution. 4. Describe the solution, identify its impacts and modify if necessary. 5. Show the steps taken and the results.	Projects Activities (e.g. bridges, buildings, simple machines, cars etc) ***More specific assessments will be designed upon purchase of new science materials.**

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Standard And Strand 3.3 Biological Sciences

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Know the similarities and differences of living things.	1. Identify life processes of living things (e.g. growth, digestion, reaction to environment). 2. Know that some organisms have similar external characteristics (e.g. anatomical characteristics- appendages, type of covering, body segments) and that similarities and differences are related to environmental circumstances. 3. Describe basic needs of plants and animals.	Reports Tests Observations Drawings Diagrams
B. Know that living things are made up of parts that have specific functions.	1. Identify an example of unicellular and multi-cellular organisms. 2. Determine how different parts of a living thing work together to make the organism function.	Drawings Diagrams ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
C. Know that characteristics are inherited and thus offspring closely resemble their parents.	1. Identify characteristics for animal and plant survival in different climates. 2. Identify physical characteristics that appear in both parents and offspring and differ between families, strains, or species.	Tests Reports Diagrams Drawings Photographs
D. Identify changes in living things over time.	1. Compare extinct life forms with living organisms. 2. Know that differences in individuals of the same species may give some advantage in survival and reproduction.	Timelines ***More specific assessments will be designed upon purchase of new science materials.**

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Standard And Strand 3.4 Physical Science, Chemistry and Physics

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Recognize basic concepts about the structure and properties of matter.	1. Describe properties of matter (e.g., hardness, reactions to simple chemical tests). 2. Know that combining two or more substances can make new materials with different properties. 3. Know the characteristics of different materials (e.g., texture, state of matter, solubility).	Tests Diagrams Discussion ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
B. Know basic energy types, sources and conversions.	1. Identify energy forms and examples (e.g., sunlight, heat, stored, motion). 2. Know the concepts of the flow of energy by measuring flow through an object or system. 3. Describe static electricity in terms of attraction, repulsion and sparks. 4. Apply knowledge of the basic electrical circuits to design and construct simple direct current circuits. 5. Classify materials as conductors or non conductors. 6. Know and demonstrate the properties of heat by producing it in a variety of ways. 7. Know the characteristics of light (e.g., reflection, refraction, absorption) and use them to produce heat, color or a virtual image.	Tests Models Projects Oral presentations ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
C. Observe and describe different types of force and motion.	1. Identify characteristics of sound (e.g., pitch, loudness, and echoes) 2. Recognize forces that attract or repel other objects and demonstrate them. 3. Describe various types of motion. 4. Compare the relative movement of objects and describe types of motion that are evident. 5. Describe the position of an object by locating it relative to another object or background (e.g., geographic direction, left, up).	Experiments Activities Discussions Tests ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
D. Describe the composition and structure of the universe and the earth's place in it.	1. Recognize the earth's place in the solar system. 2. Explain and illustrate the causes of seasonal changes. 3. Identify planets in our solar system and their general characteristics. 4. Describe the solar system motions and use them to explain time (e.g., days, seasons), major lunar phases and eclipses.	Models Diagrams Tests ***More specific assessments will be designed upon purchase of new science materials.**

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Standard And Strand 3.5 Earth Sciences

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Know basic landforms and earth history.	1. Describe earth processes (e.g., rusting, weathering, erosion) that have affected selected physical features in students neighborhoods. 2. Identify various earth structures (e.g., mountains, faults, drainage basins), through the use of models. 3. Identify the composition of soil as weathered rock and decomposed organic remains.	Models Diagrams Experiments ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
B. Know types and uses of earth materials.	1. Identify uses of various earth materials (e.g., buildings, highways, fuels, growing plants). 2. Identify and sort earth materials according to a classification key (e.g., soil/rock type).	Activities Tests Observation
C. Know basic weather elements.	1. Identify weather patterns from data charts (including temperature, wind direction, speed, and precipitation) and graphs. 2. Explain how the different seasons affect plants, animals, food availability, and daily human life. 3. Identify cloud types.	Tests Projects ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
D. Recognize the earth's different water resources.	1. Know that approximately ¾ of the earth is covered by water. 2. Identify and describe types of fresh and saltwater bodies. 3. Identify examples of water in the form of solid, liquid and gas on or near the surface of the earth. 4. Recognize other resources available from water(e.g., energy, transportation, minerals, food).	

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Standard And Strand 3.6 Technology Education

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Know that biotechnologies relate to propagating, growing, maintaining, adapting, treating and converting.	1. Identify agricultural and industrial production processes that involve plants and animals. 2. Identify waste management treatment processes. 3. Describe how knowledge of the human body influences or impacts ergonomic design. 4. Describe how biotechnology has impacted various aspects of daily life (e.g. health care, agriculture, waste treatment).	Models Webs Reports Tests Activities ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
B. Know that information technologies involve encoding, transmitting, receiving, storing, retrieving, and decoding.	1. Identify electronic communication methods that exist in the community (e.g., digital cameras, telephone, Internet, television, fiber optics). 2. Identify graphic reproduction methods. 3. Describe appropriate image-generating techniques (e.g., photography, video). 4. Demonstrate the ability to communicate an idea by applying basic sketching and drawing techniques.	Tests Models Demonstrations ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
C. Know physical technologies of structural design, analysis and engineering, finance, production, marketing, research and design.	1. Identify and categorize a variety of construction tasks. 2. Identify the major construction systems present in a specific local building. 3. Identify specific construction systems that depend on each other in order to complete a job. 4. Know skills used in construction. 5. Identify examples of manufactured goods present in the home and school. 6. Identify basic resources needed to produce a manufactured item. 7. Identify basic component operations in a specific manufacturing enterprise (e.g., cutting, shaping, attaching). 8. Identify waste and pollution resulting from a manufacturing enterprise.	***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
	9. Explain and demonstrate the concepts of manufacturing (e.g., assemble a set of papers or ball point pens sequentially, mass produce an object). 10. Identify transportation technologies of propelling, structuring, suspending, guiding, controlling and supporting. 11. Identify and experiment with simple machines used in transportation systems. 12. Explain how improved transportation systems have changed society.	

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Standard And Strand 3.7 Technological Devices

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Explore the use of basic tools, simple materials and techniques to safely solve problems.	1. Describe the scientific principles on which various tools are based. 2. Group tools and machines by their functions. 3. Select and safely use appropriate tools and materials to solve simple problems.	Posters Reports Student demonstrations
B. Select appropriate instruments to study materials.	1. Develop simple skills to measure, record, cut and fasten. 2. Explain appropriate instrument selection for specific tasks.	Student demonstrations Reports Models Tests ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
C. Identify basic computer operations and concepts.	1. Identify the major parts necessary for a computer to input and output data. 2. Explain and demonstrate the basic use of input and output devices (e.g., keyboard, monitor, printer, mouse). 3. Explain and demonstrate the use of external and internal storage devices (e.g., disk drive, CD drive).	Teacher observations Tests Demonstrations
D. Use basic computer software.	1. Apply operating system skills to perform basic computer tasks. 2. Apply basic word processing skills. 3. Identify and use simple graphic and presentation graphic materials generated by the computer. 4. Apply specific instructional software.	Student performance Demonstrations ***More specific assessments will be designed upon purchase of new science materials.**
E. Identify basic computer communication systems.	1. Apply a web browser. 2. Apply basic electronic mail functions. 3. Use online searches to answer age-appropriate questions.	

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Standard And Strand 3.8 Science, Technology and Human Endeavors

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
A. Know that people select, create and use science and technology and that they are limited by social and physical restraints.	1. Identify and describe positive and negative impacts that influence or result from new tools and techniques. 2. Identify how physical technology (e.g., construction, manufacturing, transportation) informational technology and biotechnology are used to meet man's needs. 3. Describe how scientific discoveries and technological advancements are related. 4. Identify interrelationships among technology, people and their world. 5. Apply the technological design process to solve a simple problem.	Tests Reports Models Teacher observation Student projects Demonstrations ***More specific assessments will be designed upon purchase of new science materials.**

OBJECTIVES	PERFORMANCE INDICATORS	ASSESSMENTS (Variety as per Section 4.52, Chapter 4)
B. Know how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.	1. Identify and distinguish between human needs and improving the quality of life. 2. Identify and distinguish between natural and human made resources. 3. Describe a technological invention and the resources that were used to develop it.	Tests Models Teacher observations
C. Know the pros and cons of possible solutions to scientific and technological problems in society.	1. Compare the positive and negative expected and unexpected impacts of technological change. 2. Identify and discuss examples of technological changes in the community that have both positive and negative impacts.	Student reports Models Tests ***More specific assessments will be designed upon purchase of new science materials.**