Langston Charter Middle School **1950 Woodruff Road** **Greenville, SC 29607**
www.langstoncharter.org **Phone (864) 286-9700** **Fax (864) 286-9699**

2021-2022 Course Syllabus-7th Grade Science
Mr. Leeke, Mrs. Roueche, Mr. Shade, and Mrs. Turner

Phone: (864) 286-9700
Email: dleeke@langstoncharter.org broueche@langstoncharter.org
mshade@langstoncharter.org hturner@langstoncharter.org

Textbook: *South Carolina iScience, Columbus OH; McGraw-Hill Education,* 7th Grade Edition [2015] @2017, ISBN 978-0-02-143250-9

Course Description: Students in grade seven continue to deepen their knowledge of the life, earth, and physical sciences through more complex investigations and explanations. The concepts they study become increasingly abstract in a developmentally appropriate manner to allow for the slow, incremental development of these cognitively complex ideas. Seventh graders also continue to develop their investigative skills by generating their own questions, recognizing and explaining the relationships among variables, and critiquing the conclusions that are drawn from scientific investigations. Specifically, these students explore the sciences within the framework of the following topics "**The Chemical Nature of Matter**" (classifications and properties of matter, changes in matter). "**Human Body Systems and Disease**" (functions and interconnections within the human body and the breakdown of these functions due to disease); "**Cells and Heredity**" (structure and function of cells and heredity); and "**Ecology: The Biotic and Abiotic Environment**" (interactions and responses between biotic and abiotic components and organisms); The science standards for grade seven provide the foundation for a course that is based on a rich and wide variety of learning experiences that actively engage students and accommodate a broad range of student learning styles through varied materials and instructional strategies. Students should observe, interact with materials and with people, and ask questions as they explore new concepts and expand their knowledge. The skills and tools listed in the scientific inquiry sections will be assessed on statewide tests independently from the content knowledge in the respective grade or high school core area under which they are listed. Moreover, scientific inquiry standards and indicators will be assessed cumulatively. Therefore, as students progress through the grade levels, they are responsible for the scientific inquiry indicators-including knowledge of the use of tools-in all their earlier grades. The science standards in grades three through eight will be the basis for the development of the science test questions for the Palmetto Assessment of State Standards (PASS). The PASS is based on the broad standards that address the life, earth, and physical sciences at each grade level. Individual test questions will be aligned with the indicators and will not go beyond the scope and intent of the more specific information in the indicators. While standards at lower grade levels will not be directly assessed, they may be used to formulate multiple-choice distracter items. These standards can be found at

https://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf

Evaluation:

Tests/Major Projects 100 pts (Around 4) =	400 Points
Labs/Quizzes 50 pts (Around 8) =	400 Points
Homework/Classwork 20 pts (Around 10) =	200 Points
	1000 at end of the quarter

900-1000 Points = A
800-899 Points = B
700-799 Points = C
600-699 Points = D
Below 600 = F

Our primary goal is to maximize student achievement. The teacher reserves the right to add, delete, or substitute materials and topics as deemed necessary for optimum student learning. Every effort is made to accommodate individual needs, academic levels, and learning styles of each student throughout the year as opportunities arise.

1st Quarter

Science and Engineering Practices (used throughout the year)	**Standard**
Ask questions to (1) generate hypotheses for scientific investigations, (2) refine models, explanations, or designs, or (3) extend the results of investigations or challenge claims.	7.S.1A.1
Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.	7.S.1A.2
Plan and conduct controlled scientific investigation to answer questions, test hypotheses, and develop explanations: (1) formulate scientific questions and testable hypotheses, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.	7.S.1A.3
Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or designs.	7.S.1A.4

Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) collect and analyze data, (3) express relationships between variables for models and investigations, or (4) use grade-level appropriate statistics to analyze data.	7.S.1A.5
Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.	7.S.1A.6
Construct and analyze scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.	7.S.1A.7
Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.	7.S.1A.8
Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.	7.S.1B.1

Physical Science: Classification and Conservation of Matter	**Standard**
Develop and use simple atomic models to illustrate the components of elements (including the relative position and charge of protons, neutrons, and electrons).	7.P.2A.1
Obtain and use information about elements (including chemical symbol, atomic number, atomic mass, and group or family) to describe the organization of the periodic table.	7.P.2A.2
Analyze and interpret data to describe and classify matter as pure substances (elements or compounds) or mixtures (heterogeneous or homogeneous) based on composition.	7.P.2A.3
Construct explanations for how compounds are classified as ionic (metal bonded to nonmetal) or covalent (nonmetals bonded together) using chemical formulas.	7.P.2A.4
Analyze and interpret data to describe substances using physical properties (including state, boiling/melting point, density, conductivity, color, hardness, and magnetic properties) and chemical properties (the ability to burn or rust).	7.P.2B.1
Use mathematical and computational thinking to describe the relationship between the mass, volume, and density of a given substance.	7.P.2B.2
Analyze and interpret data to compare the physical properties, chemical properties (neutralization to form a salt, reaction with	7.P.2B.3

metals), and pH of various solutions and classify solutions as acids or bases.	
Plan and conduct controlled scientific investigations to answer questions about how physical and chemical changes affect the properties of different substances.	7.P.2B.4
Develop and use models to explain how chemical reactions are supported by the law of conservation of matter.	7.P.2B.5

2nd Quarter

Life Science: Organization in Living Systems	**Standard**
Obtain and communicate information to support claims that (1) organisms are made of one or more cells, (2) cells are the basic unit of structure and function of organisms, and (3) cells come only from existing cells.	7.L.3A.1
Analyze and interpret data from observations to describe different types of cells and classify cells as plant, animal, protist, or bacteria.	7.L.3A.2
Develop and use models to explain how the relevant structures within cells (including cytoplasm, cell membrane, cell wall, nucleus, mitochondria, chloroplasts, lysosomes, and vacuoles) function to support the life of plant, animal, and bacterial cells.	7.L.3A.3
Construct scientific arguments to support claims that bacteria are both helpful and harmful to other organisms and the environment.	7.L.3A.4
Develop and use models to explain how the structural organizations within multicellular organisms function to serve the needs of the organism.	7.L.3B.1
Construct explanations for how systems in the human body (including circulatory, respiratory, digestive, excretory, nervous, and musculoskeletal systems) work together to support the essential life functions of the body.	7.L.3B.2

3rd Quarter

Life Science: Heredity-Inheritance and Variation of Traits	**Standard**
Obtain and communicate information about the relationship between genes and chromosomes to construct explanations of their relationship to inherited characteristics.	7.L.4A.1
Construct explanations for how genetic information is transferred from parent to offspring in organisms that reproduce sexually.	7.L.4A.2
Develop and use models (Punnett squares) to describe and predict patterns of the inheritance of single genetic traits from parent to offspring (including dominant and recessive traits, incomplete dominance, and codominance.)	7.L.4A.3
Use mathematical and computational thinking to predict the probability of phenotypes and genotypes based on patterns of inheritance.	7.L.4A.4

Construct scientific arguments using evidence to support claims for how changes in genes (mutations) may have beneficial, harmful, or neutral effects on organisms.	7.L.4A.5
Construct scientific arguments using evidence to support claims concerning the advantages and disadvantages of the use of technology (such as selective breeding, genetic engineering, or biomedical research) in influencing the transfer of genetic information.	7.L.4A.6

4th Quarter

Ecology: Interactions of Living Systems and the Environment	**Standard**
Develop and use models to describe the characteristics of the levels of organization within ecosystems (including species, populations, communities, ecosystems, and biomes)	7.EC.5A.1
Construct explanations of how soil quality (including composition, texture, particle size, permeability, and pH) affects the characteristics of an ecosystem using evidence from soil profiles.	7.EC.5A.2
Analyze and interpret data to predict changes in the number of organisms within a population when certain changes occur to the physical environment (such as changes due to natural hazards or limiting factors).	7.EC.5A.3
Define problems caused by the introduction of a new species in an environment and design devices or solutions to minimize the impact(s) to the balance of an ecosystem.	7.EC.5A.4