Dr. Moorman 8th Grade Science

Physical Science is a course that explores the phenomena of the physical world around us. It is a laboratory course that integrates principles of physics and chemistry. It emphasizes inquiry-based learning, process skills, and higher order thinking skills.

Suggested Supplies and Materials:
3 ring binder, notebook paper, dividers, and pencils/pens (The science notebook will contain class notes, homework, and lab work.) or folder (for homework and lab work) and spiral notebook (for class notes)

Instructional Philosophy:
Our classroom is designed to provide a conducive learning environment in that students are able to experience the course through any of the four learning styles (visual, auditory, reading/writing, and kinesthetic). This course is not only taught through direct teacher lectures, but also collaborative group work and independent study. Learning is a process and it is my sincere desire to provide your child with the knowledge and experience he/she will need to be successful in class.

Classroom Expectations:
The Jefferson County Board of Education discipline policy will be strictly followed. The overriding **classroom rule** is**: Respect is the rule. The rule is respect.** Each class will establish their own additional rules if needed. Consequences for violating this rule are managed at the classroom level. If the behavior persists, then the following policy is in effect: The first violation will result in documentation and a warning. The second violation will be documented and a parent or guardian will be contacted. The third violation will be referred to the administration.

Homework Policy & Grading Scale:
The homework policy and grading scale will be the same policies adopted by the Jefferson County School Board and included in the student handbook. Please refer to this document for details.

Grades will be earned according to the following standards based grading system. Assignments will include tests, quizzes, laboratories, homework, class work, and various projects. Students will receive opportunities to earn extra credit points at various times throughout the year and will be notified in advance of these particular opportunities.

Make-up Work:
All make-up work should be discussed with the teacher on the first day that the student returns to school following any absence and is the **sole responsibility of the student**. Students will be given one week to complete missed assignments due to **excused absences**.

Course Assessment Plan:
The following forms of assessment will be used to ascertain whether or not the student has mastered the content/standard for this course: written questions (quick-writes) which cover the previous day's topics, quizzes, tests, laboratory activities, oral discussions, exit questions (ticket out the door ~tod) which cover the day's topic and a final exam which is comprehensive.

Physical Science - Standards

S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

a. Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures. (Clarification statement: Include heterogeneous and homogeneous mixtures. Types of bonds and compounds will be addressed in high school physical science.)

b. Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.

c. Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.

d. Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical. (Clarification statement: Evidence could include ability to separate mixtures, development of a gas, formation of a precipitate, change in energy, color, and/or form.)

e. Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.

f. Construct an explanation based on evidence to describe conservation of matter in a chemical reaction including the resulting differences between products and reactants. (Clarification statement: Evidence could include models such as balanced chemical equations.)

S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.

a. Analyze and interpret data to create graphical displays that illustrate the relationships of kinetic energy to mass and speed, and potential energy to mass and height of an object.

b. Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands, etc.).

c. Construct an argument to support a claim about the type of energy transformations within a system [e.g., lighting a match (light to heat), turning on a light (electrical to light)].

d. Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).

S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.

a. Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration. (Clarification statement: Students should be able to analyze motion graphs, but students should not be expected to calculate velocity or acceleration.)

b. Construct an explanation using Newton's Laws of Motion to describe the effects of balanced and unbalanced forces on the motion of an object.

c. Construct an argument from evidence to support the claim that the amount of force needed to accelerate an object is proportional to its mass (inertia).

S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.

a. Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves. (Clarification statement: Include transverse and longitudinal waves and wave parts such as crest, trough, compressions, and rarefactions.)

b. Construct an explanation using data to illustrate the relationship between the electromagnetic spectrum and energy.

c. Design a device to illustrate practical applications of the electromagnetic spectrum (e.g., communication, medical, military).

d. Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials. (Clarification statement: Include echo and how color is seen but do not cover interference and scattering.)

e. Analyze and interpret data to predict patterns in the relationship between density of media and wave behavior (i.e., speed).

f. Develop and use a model (e.g., simulations, graphs, illustrations) to predict and describe the relationships between wave properties (e.g., frequency, amplitude, and wavelength) and energy.

g. Develop and use models to demonstrate the effects that lenses have on light (i.e., formation an image) and their possible technological applications.

S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.

a. Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact.

b. Plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators. (Clarification statement: Include conduction, induction, and friction.)

c. Plan and carry out investigations to identify the factors (e.g., distance between objects, magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) that affect the strength of electric and magnetic forces. (Clarification statement: Including, but not limited to, generators or motors.)

Science Georgia Standards of Excellence
Georgia Department of Education March 31, 2016