**Time:** 11:22-12:29 M-F

**Instructor:** Mr. Kuhns

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**Textbook:** *Physical Science* 6th ed. BJU Press

**Description:** This course is a study of the non-living, physical creation. We will begin by building a Christian foundation for science, and continue with four specific content areas: the structure of matter, changes in matter, matter in motion, and waves and energy. This course will serve only as an introduction to each of these subjects.

**Goals:** In this course, I hope to…

1. Demonstrate that true science points toward an all-powerful Creator and brings Him glory.
2. Provide a Christian perspective of science through which students may properly interpret scientific data.
3. Help students understand the nature and power of scientific inquiry.

**Objectives:** At the end of this course, the student will be able to…

1. Show how models affect interpretations of data.
2. Describe the importance of models to the process of science.
3. Properly use the scientific method.
   1. Compare and contrast scientific theories.
   2. Know that both direct and indirect observations are used by scientists to study the natural world and universe.
   3. Identify questions and concepts that guide scientific investigations.
   4. Formulate and revise explanations and models using logic and evidence.
   5. Recognize and analyze alternative explanations and models.
   6. Explain the importance of accuracy and precision in making valid measurements.
4. Discuss each aspect of physical science studied in this course.
5. Correctly define and use vocabulary words studied in this course.
6. Demonstrate familiarity with SI units of measurement.
7. Describe phases of matter according to the kinetic molecular theory.
8. Describe the historical development of models of the atom and how they contributed to modern atomic theory.
9. Predict properties of elements using trends of the periodic table.
10. Describe the unique characteristics of carbon that make it an ideal element for organic chemistry.
11. Compare and contrast different bond types that result in the formation of molecules and compounds.
12. Explain why **compounds** are composed of integer ratios of **elements.**
13. Describe chemical reactions in terms of atomic rearrangement and/or electron transfer.
14. Predict the amounts of products and reactants in a chemical reaction using mole relationships.
15. Explain the difference between endothermic and exothermic reactions.
16. Identify the factors that affect the rates of reactions.
17. Distinguish among five types of nuclear changes including two types of nuclear reactions.
18. Distinguish between mixtures and solutions.
19. Calculate solution concentrations.
20. Tell the relationship among acids, bases, and salts.
21. Mathematically describe position and velocity of objects.
22. Analyze the relationships among the net forces acting on a body, the mass of the body, and the resulting acceleration using Newton’s Second Law of Motion.
23. Apply Newton’s Law of Universal Gravitation to the forces between two objects.
24. Use Newton’s
25. Third Law to explain forces as interactions between bodies.
26. Describe how interactions between objects conserve momentum.
27. Explain the relationships between work and power.
28. Build a device powered by a mousetrap that accelerates under its own power and travels at least 35 feet along a flat surface.
29. Explain how the overall energy flowing through a system remains constant.
30. Describe the work-energy theorem.
31. Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.
32. Analyze the processes of convection, conduction, and radiation between objects or regions that are at different temperatures.
33. Apply the ideal gas laws to specific given situations.
34. Mathematically describe periodic motion.
35. Describe the properties of sound waves.
36. Describe quantitatively the relationships between voltage, current, and resistance to electrical energy and power.
37. Describe the relationship between electricity and magnetism as two aspects of a single electromagnetic force.
38. Compare and contrast the wave nature of light and sound.
39. Describe the components of the electromagnetic spectrum.
40. Explain how the behavior of matter and energy follow predictable patterns that are defined by laws.

**Requirements:** The successful student will…

1. Properly complete all assignments in a timely manner.
2. Maintain a 70% average on all tests and quizzes.
3. Maintain an organized course notebook from which tests and quizzes will be studied.
4. Actively participate in class discussions, group projects, and lab activities.
5. Follow all general classroom procedures.

**Methods:**  This class will focus on big-picture ideas from which specific conclusions can be drawn. To that end, we will use class lectures, numerous lab activities, discussions, and class projects.

**Materials required:** You will need a 1-inch binder dedicated to this course.

**Grading policies:** It is important that assignments be completed and turned in on time. I will generally collect assignments at the beginning of the class period on the day they are due. Any late assignments will be docked at my discretion, but generally 20% per day they are late. If you are having difficulty keeping up with assignments, do not simply fail to turn them in. Talk to me, and we will work out a solution. Consistently failing to turn in assignments shows a lack of regard for learning and will be graded accordingly.

Here is a breakdown of the grade by assignment type:

Homework and projects: 25%

Chapter tests: 40%

Quarterly exams: 25%

Participation: 10%