High School Physical Science Syllabus

Course Title: Physical Science
Instructor: Mr. Ogle
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Classroom Location: 210

Course Overview:

Physical Science is an engaging and math-intensive course designed to introduce students to the basic principles of physics and chemistry. It covers fundamental topics that explain the world around us, from the smallest particles to the forces that shape our universe. Students will explore key concepts in matter, energy, forces, and waves while developing essential skills in data analysis, especially using and understanding graphs and charts, critical thinking, and problem-solving through the application of mathematical techniques.

Practical Applications of Physical Science:

The knowledge gained in this course has countless real-world applications, such as:

- Understanding how chemical reactions occur in everyday life (e.g., cooking, digestion, industrial processes).
- Investigating how forces affect objects, from sports to engineering.
- Exploring how energy is transformed and conserved in systems such as vehicles, electrical devices, and the human body.
- Studying waves to understand light, sound, and communication technology.

Physical science will help students make informed decisions in their personal and professional lives, from energy consumption to understanding the latest technological advances.

Required Materials

- Composition book for notes and assignments
- Sticky notes
- Index cards
- Pen, pencil, and ruler (for graphing and calculations)
- Scissors
- Colored Pencils
- Glue sticks
- Students will need their laptop EVERY DAY for in class activities

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Course Units:

This course is divided into 8 major units. Each unit will combine theoretical concepts with practical, hands-on activities and mathematical problem-solving.

Unit 1: Mechanics **5 days**

- Topics: Motion, speed, velocity, acceleration, momentum.
- Key Focus: Understanding how objects move affect one another.

Unit 2: Forces **8 days**

- Topics: Gravity, weight, mass, friction, force, and Newton's Laws.
- Key Focus: Analyzing the forces that influence motion and stability.

Unit 3: Electricity and Magnetism **10 days**

- Topics: Electricity types, circuits, current, magnetic fields, electromagnetism, magnetic forces.
- Key Focus: Investigating electricity, the forces between magnets and their real-world applications.

Unit 4: Matter **15 days**

- Topics: Properties of matter, states of matter, atomic structure, scaler vs vector, the periodic table.
- Key Focus: Understanding the physical and chemical properties of substances.

Unit 5: Matter and Chemical Systems **13 days**

- Topics: Chemical bonds, reactions, equations, conservation of mass, acids and bases, chemical nomenclature.
- Key Focus: Exploring how matter changes and reacts in different systems.

Unit 6: Radiation and Radioactivity **6 days**

- Topics: Types of radiation, half-life, radioactive decay, uses of radioactive materials, fusion.
- Key Focus: Studying the behavior of unstable nuclei and their impact on the environment and technology.

Unit 7: Energy **10 days**

- Topics: Kinetic energy, thermal energy, work, power, potential energy, conservation of energy, energy transformation.
- Key Focus: Understanding energy in different forms and how it is conserved in systems.

Unit 8: Waves **10 days**

- Topics: Properties of waves, sound, light, electromagnetic spectrum, wave behavior, wave technology
- Key Focus: Exploring the nature of waves and their applications in communication and technology.

Course Requirements:

2. **Class Participation and Engagement**
    - Active participation in class discussions and activities is critical for success.
    - Ask questions, collaborate with peers, and engage in hands-on experiments.
    - Participation without complaint is graded daily and will add up to 15% of your grade, graded at my discretion.
3. **Assignments and Assessments**
    - Assignments will include daily practice problems, lab reports, quizzes, and projects.
    - Tests will be given periodically to assess understanding of the material.
    - There will be a combination of individual and group work for in-class assignments.

- Every day will begin with a warm-up assignment and will end with a ticket out the door. These assignments will count as your daily assessment grade and are timed.

Grading Breakdown:

Your grade will be based on the following categories:

Assessment Type	Percentage of Final Grade
Daily Assessments	20%
Tests	25%
In-Class Assignments	40%
Participation & Engagement	15%

Course Policies:

1. **Attendance:** Regular attendance is crucial for understanding the material and participating in hands-on activities. Absences should be excused and made up promptly.
2. **Late Work:** Late assignments will be penalized unless prior arrangements are made. Please communicate with the me if you need extra time.
3. **Make-Up Work:** If you miss a test or assignment due to an excused absence, you must complete the make-up work within three days of returning to class. YOU are responsible for coming to me to gather the work for the days that you miss and completing it for homework.
4. **Classroom Conduct:** Respectful behavior is expected at all times. Collaboration and mutual respect are key to a positive learning environment. I have a zero tolerance policy for offensive treatment of others.

Additional Notes:

- **Math Intensive Course:** This course will include significant mathematical components, especially in data analysis and graphing. Expect to use graphs, charts, and algebraic equations frequently throughout the year to solve problems and analyze experimental data.
- **Homework:** Homework will be given for students who need extra practice or fail to complete assignments in class and the grade of the homework will affect the in-class assignments grade
- **Open-Door Policy:** I have an open-door policy. You can see me anytime that you need but please come by during my planning period, before, or after school. I WANT you to succeed in my class. Even more importantly, I WANT you to become good, wise, responsible adults. That's why I teach.

Let's have a great year of learning, exploration, and discovery in Physical Science!

Student Signature:

Parent/Guardian Signature: