**Physical Science**

**Course Content Outline**

**Chemistry [Textbook/s: Prentice Hall Physical Science Concepts in Action and Prentice Hall Chemistry]**

1. Matter and Energy
2. Properties of Matter
3. States of Matter
4. The gas laws (Kinetic theory of gases and relation between pressure, volume and temperature)
5. Law of conservation of mass
6. Physical vs. Chemical Changes
7. Law of conservation of energy
8. Atomic Structure
9. The Structure of Atom (Bohr’s and Schrodinger’s atomic structure, and electronic configurations)
10. Modern Atomic Theory
11. The Modern Periodic Table
12. Naming Chemical Compounds and Balancing Equations
13. Monatomic vs polyatomic ions
14. Writing formula and naming ionic compounds
15. Writing formula and naming covalent compounds
16. Polar covalent bonds
17. Writing and balancing chemical equations
18. Identifying chemical reactions: Heat of reaction, Exothermic and Endothermic reactions
19. Stoichiometry
20. Coefficients in balanced equations
21. Mole ratios
22. Mole-mass conversions
23. Solutions, acids and bases: Arrhenius and Bronsted- Lowry theory of acids and bases, conjugate acid base pair, basic pH scale.

**Physics (Algebra based): [Textbook/s: Prentice Hall Physical Science Concepts in Action]**

1. Mechanics (Kinematics and Dynamics)
2. Describing motion and frame of reference
3. Distance and Displacement
4. Speed and Velocity: Difference between the two. Thus vector and scalar quantities, addition of vectors (graphically and Pythagorean Theorem) and law of parallelogram. Problems on relative velocity.
5. Acceleration
6. Describing motion graphically (position vs. time and velocity vs. time graphs)
7. Newton’s laws of motion
8. Forces: Types of forces (mechanical, gravity and friction), balanced and unbalanced forces, net force and free body diagrams, net force and acceleration problems.
9. Mechanical Work, Energy and Power: Potential and kinetic energy, roller coaster problems, calculating work, energy and power. Conservation of energy.