Center Unified School District

Middle School Course Outline

Title: General Science (Focus on Physical Science)

Grade Level: 8th Grade

Prerequisites: 8th Grade Standing

Course Description: The eighth grade middle school science program emphasizes individual and active learning. This approach focuses on how a learner fits new information into his or her existing bank of knowledge and attitudes so new concepts will be constructed. Students understand the nature of science both as a way of thinking about the world and as a process. This program reflects the current state science standards for Eighth Grade. Each grade level includes investigation and experimentation as it relates each of the subject area/standards covered. The subject areas covered as follows:

- Motion
- Forces
- Structure of Matter
- Earth in the Solar System
- Reactions
- Chemistry of Living Systems
- Periodic Table
- Density and Buoyancy

Details of the individual elements for each standard can be found on the CA Dept. of Education web site: http://www.cde.ca.gov/be/st/ss/documents/sciencestnd.pdf

Units of Instruction:

Matter: Particles, Physical Properties and Changes: Key concepts- particle theory, physical versus chemical properties and changes, density.

Textbook chapters to supplement lessons and activities: Chapter 1, 2, 3

Atoms and the Periodic Table: Key concepts- atomic structure, elements versus compounds, arrangement of elements in the periodic table, important families in the periodic table, metals, semimetals, nonmetals, radioactive elements.

Textbook chapters to supplement lessons and activities: Chapter 4, 5

Chemical Reactions: Key Concepts- Observing chemical reactions, describing chemical reaction types, balancing chemical equations, factors affecting chemical reactions (reaction rate, exothermic versus endothermic).

Textbook chapters to supplement lessons and activities: Chapter 6

Solution Chemistry: Key Concepts- Nature of solutions, describing acids and bases and their properties in solution, ions and ionic bonding, pH, indicators, neutralization reaction.

Textbook chapters to supplement lessons and activities: Chapter 7

Carbon Chemistry: Key Concepts- Properties of carbon, covalent bonding, isomers, and chemicals of life: carbohydrates, lipids, proteins, and nucleic acids.

Textbook chapters to supplement lessons and activities: Chapter 8

Forces: Key Concepts- Defining force, different types of forces, friction, gravity, inertia.

Textbook chapters to supplement lessons and activities: Chapter 10

Motion and the Laws of Motion: Key Concepts- Defining motion, speed and velocity, acceleration, Newton's Three Laws of Motion.

Textbook chapters to supplement lessons and activities: Chapter 9

Forces in Fluids: Key Concepts- Pressure, Pascal's Principle, density, buoyancy, floating and sinking, Bernoulli's Principle.

Textbook chapters to supplement lessons and activities: Chapter 11

Astronomy: Key Concepts- Earth, the Solar System, Stars, Galaxies and the Universe.

Textbook chapters to supplement lessons and activities: Chapter 12, 14, 15

Family Life: Key Concepts- Genetics, Male and female reproductive systems, pregnancy, birth, birth control and pregnancy prevention, sexually transmitted infections and their prevention.

Textbook chapters to supplement lessons and activities: Chapter 5, 16 in California Life Science

Evaluation: Student progress will be evaluated by:

Assignments= 40% of semester grade

Assessments= 45% of semester grade

Semester Final= 15% of semester grade

Instructional Strategies- May include some or all of the following:

Lecture/Note taking/Power Points

Observation/Demonstration

Laboratory hands-on experimentation

Written assignments

Virtual Labs

Success Tracker

Group Projects

Cooperative Groups

Audio-visual aids

Tests/Quizzes

Games

Reading-text, graphs, charts, magazines, news articles

Materials and Resources:

Textbook: Focus on Physical Science, Science Explorer- California Edition

Focus on Life Science, Science Explorer- California Edition

Workbook: Reading And Note Taking Guide, California Life Science