

Phoenix Christian High School

SCI110 Integrated Science

Course Scope & Sequence (2010)

COURSE DESCRIPTION

Integrated Science is a 9th grade level course that introduces students to beginning concepts in physics, chemistry, Earth Science and Astronomy. If time is available, a brief introduction to Biology will be covered. Scientific foundations are laid to encourage success in future courses of a more advanced nature.

REQUIRED TEXTS AND *KEY SUPPLEMENTAL MATERIALS

Conceptual Integrated Science (Hewitt, Lyons, Suchockik, Yeh) Pearson Publishing.

COURSE SCOPE AND SEQUENCE

Unit One 9 Weeks

Introduction to Science
Physics of motion
Newton's Laws of Motion
Energy and Momentum
Gravity
Heat
Electricity and Magnetism
Sound and light waves
Structure of the Atom
Basics of Nuclear Physics

Key Concepts: What is and is not Science. Scientific Method, How Properties Identify Substances. How to Take Accurate Measurements and Use Laboratory Equipment. How to Graph. Objects in Motion, Calculating an Object's Speed and Velocity Using SI Units of Distance, Graphing Motion to Show Changes in Distance. The Motion of an Object As It Accelerates, Calculating The Acceleration of an Object and Graphing Changing Speed and Distance of an Accelerating Object. How Balanced and Unbalanced Forces are Related. Newton's First Law of Motion and Inertia, Newton's 2nd and 3rd Law and Their Properties. Rockets and Satellites, Pressure and Changes With Altitude and Depth, Pascal's Principle, Bernoulli's Principle. Construction and Launching of Rockets. Work, Machines and Human Levers, Thermal Energy, Waves, Electromagnetic Spectrum, Light, Electricity, Magnetism, and Electronics.

Assessments: Quizzes, Chapter Tests, Guided Reading Assignments, Worksheets, Laboratory work and Laboratory Write-Ups.

Biblical Integration: The Order in The Universe Including Laws of Motion. The Earth Pre and Post Flood and Calculating Continental Drift. The Creation of Light, Physical Constants and The Human Body and Its Amazing Structure. Mass Communication and The End Times. Technology and How We Can Use It to Serve Him.

Unit Two

9 Weeks

Basic Chemistry
Periodic Table of Elements
Types and Properties of Matter
Chemical Bonding
Chemical Reactions
Basic Organic Chemistry

Key Concepts: Why Elements are Called The Building Blocks of Matter, Distinguishing Between Chemical and Physical Changes, The Difference Between Weight and Mass and Density, Atoms and Chemical Bonds, Chemical Reactions, Define and Differentiate Solids, Liquids, and Gases and Phase Changes, The Relationship Between Volume, Pressure and Temperature, The Structure of an Atom, The Role of Valence Electrons in Chemical Bonds, The Periodic Table, Comparing Physical and Chemical Properties On The Periodic Table, Ionic and Covalent Bonding. Calculations Like Pressure and Density

Evidences of Chemical Reactions, How Chemical Bonds Change in Reactions, Information Conveyed in A Chemical Equation, Factors Controlling Chemical Reactions, Define and Compare Solutions Suspensions, and Colloids. Nuclear Reactions. Growing Crystals. How Solutes Affect The Freezing and Boiling Points of Solvents, Properties of Acids and Bases, The Ph Scale, Digestion, Properties Many Organic Compounds Have in Common. The Four Main Classes of Organic Compounds in Living Things, The Building Blocks of Carbohydrate, Fat and Protein.

Assessments: Quizzes, Chapter Tests, Guided Reading Assignments, Worksheets, Laboratory Investigations and Laboratory Write-Ups.

Biblical Integration: God's Ordered Creation. Examples Include: Matter, Math, The Periodic Table's Consistency, Colossians 1:16, Etc. The Creation of Elements and Macromolecules Versus Random Processes.

Second Semester

Unit Three

9 Weeks

Introduction to Earth Science
Plate Tectonics
Rocks and Minerals
Study of the Earth's Surface
Characteristics of Land and Water

Key Concepts: Seismology, Earth's Layers, Continental Drift, Ocean Trenches, Earthquakes, Minerals and their Properties, Igneous Rocks, Sedimentary Rock, Metamorphic Rock, Folds and Faults of the Crust, Mountains, Seas and Oceans and their Currents, Types and Formation of Clouds, Humidity, Dew point, Hurricanes, Tornados, Cyclones, Storms, Fresh and Salt Water, Erosion, Weather and Climate, Solar Radiation, Atmospheric Pressure, The Atmosphere and its divisions, Global Climate Change and Greenhouse effect, Earth's History and Geologic Time,

Assessments: Quizzes, Chapter Tests, Guided Reading Assignments, Worksheets, Laboratory work and Laboratory Write-Ups.

Biblical Integration: The Creation of Planets and The Earth Situated in A Precise Location. The Complexity of Biomolecules. Passages From Genesis and Psalms.

Astronomy

The Solar System

The Sun

The Planets

Galaxies

The Universe

Constellations

Key Concepts: An Overview of our Solar System, The inner and outer planets, Moons, comets, asteroids and the asteroid belt, meteorites, What makes the earth so different from the other planets. How telescopes are built and how they work, Black holes, wormhole theory, Types and shapes of galaxies.

Assessments: Quizzes, Chapter Tests, Guided Reading Assignments, Worksheets, Laboratory work and Laboratory Write-Ups.