EDUCATION | SCIENCE

California NGSS High School

## Chemistry in the Earth System

### UNIT 1
**Heat and Energy in the Earth System**
- *1.1 Heat*
- *1.2 Thermochemistry*
- *1.3 The Cycling of Matter and Energy*
- *1.4 Earth's Interior*
- *1.5 Tectonic Plate Interactions*
- *1.6 Volcanoes*

### UNIT 2
**Atoms and Elements**
- *2.1 Parts of the Atom*
- *2.2 Arrangement of Electrons in the Atom*
- *2.3 Electron Representations*
- *2.4 Structure of the Periodic Table*
- *2.5 Periodic Trends*

### UNIT 3
**Molecules and Bonding**
- *3.1 Ion Formation*
- *3.2 Ionic Bonding*
- *3.3 Covalent Bonding*
- *3.4 Lewis Structures and Molecular Geometry*
- *3.5 Chemical Formulas*

### UNIT 4
**Chemical Reations**
- *4.1 Chemical Reactions and Equations*
- *4.2 Mathematics of Formulas and Equations*
- *4.3 Oxidation-Reduction Reactions*
- *4.4 Electrochemistry*

### UNIT 5
**Chemistry and the Biosphere**
- *5.1 The Composition and Behavior of the Atmosphere*
- *5.2 Solutions*
- *5.3 Acids, Bases, and Salts*
- *5.4 Chemical Equilibrium*
- *5.5 Reaction Rate*
- *5.6 Ocean Water*

## Physics of the Universe

### UNIT 1
**Forces and Motion**
- *1.1 Understanding and Describing Motion*
- *1.2 Newton's Laws*
- *1.3 Using Vectors and Scalars to Describe Motion*
- *1.4 Solving Motion Problems*
- *1.5 Conservation of Momentum*

### UNIT 2
**Forces at Distance**
- *2.1 Fundamental Forces*
- *2.2 Nuclear Forces*
- *2.3 Electric Forces*
- *2.4 Gravity*
- *2.5 Movement in Space*

### UNIT 3
**Energy Conversion and Renewable Energy**
- *3.1 Types of Energy*
- *3.2 Conservation of Energy*
- *3.3 Laws of Thermodynamics*
- *3.4 Electricity and Magnetism*
- *3.5 Conductors and Insulators*

### UNIT 4
**Nuclear Process**
- *4.1 Nuclear Physics*
- *4.2 Radiometric Dating*

### UNIT 5
**Waves and Electromagnetic Radiation**
- *5.1 Wave Characteristics*
- *5.2 Reflection and Refraction*
- *5.3 Seismic Waves*
- *5.4 Earthquakes and Their Impacts*

### UNIT 6
**Stars and the Origins of the Universe**
- *6.1 Understanding the Universe*
- *6.2 Stars and Galaxies*

## The Living Earth

### UNIT 1
**Ecosystems Interactions**
- *1.1 Earth's Spheres*
- *1.2 Ecosystems*
- *1.3 Describing Populations*
- *1.4 Biomes*

### UNIT 2
**Energy, Matter, and Life**
- *2.1 Energy afor Life*
- *2.2 Photosynthesis*
- *2.3 Cellular Respiration*
- *2.4 Nutrient Cycles*
- *2.5 Mechanical and Chemical Weathering*
- *2.6 Erosion and Deposition*

### UNIT 3
**Evolving Earth**
- *3.1 The History of Life on Earth*
- *3.2 The Development of Earth*
- *3.3 Evidence for Evolution*
- *3.4 Relative Dating*
- *3.5 Evidence for Evolution*
- *3.6 Mechanisms for Evolution*

### UNIT 4
**Inheritance and Variation**
- *4.1 Genetics*
- *4.2 DNA*
- *4.3 Transcription and Translation*
- *4.4 Genetic Disorders and Technology*

### UNIT 5
**Cells to Organisms**
- *5.1 The Chemistry of Life*
- *5.2 Cell Structure and Function*
- *5.3 Cell Transport*
- *5.4 Cell Division*
- *5.5 Asexual and Sexual Reproduction*
- *5.6 Biological Organization and Control*

### UNIT 6
**Human Activities and the Biosphere**
- *6.1 Natural Resources*
- *6.2 Relationships between Human Activity and Earth's Systems*
- *6.3 Understanding Climate and Climate Change*
- *6.4 Impacts on Biodiversity*

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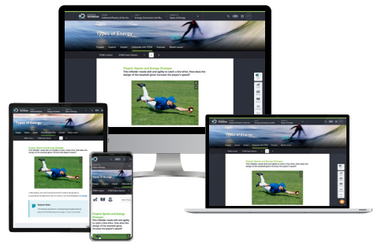

***Also available in Spanish***