

EARTH SCIENCE

First Term - September through January			
Unit 1	Unit 2	Unit 3	Unit 4
<p>Maps and Measurements (17 days)</p> <ul style="list-style-type: none"> • Short introduction of origin of Earth and our place in the universe (Big Bang, solar system) • Measurements, reference tables, graphing, nature of earth science • Locating points on the earth, latitude, longitude, maps • Isomaps (topographic maps) • GPS/GIS 	<p>Dynamic Earth (18 days)</p> <ul style="list-style-type: none"> • Structure of earth & properties • Convection cycles & density • Evidence of movement • Plate Tectonics • Earthquakes and volcanoes -tsunamis 	<p>Rocks and Minerals (15 days)</p> <ul style="list-style-type: none"> • Minerals • Igneous rocks • Metamorphic rocks • Sedimentary rocks (intro - may be taught with weathering) • Mining & natural resources 	<p>Landscapes (30 days)</p> <ul style="list-style-type: none"> • Water cycle • Hydrology (Stream mechanics, ground water) • Weathering agents • Erosion & Deposition • Sedimentary rocks if not covered previously • Soils (porosity, permeability) • Real world applications -agriculture, mudslides

Second Term - February through June					
Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	
<p>Earth History (12 days)</p> <ul style="list-style-type: none"> • Fossils • Geologic Time • Stratigraphy • Radioactive Dating 	<p>Insolation (13 days)</p> <ul style="list-style-type: none"> • Arc of sun's travel • Seasons • Energy exchanges in the atmosphere 	<p>Meteorology (17 days)</p> <ul style="list-style-type: none"> • Systems • Models • Weather variables - El Nino 	<p>Climate (10 days)</p> <ul style="list-style-type: none"> • Factors that affect climate (altitude, latitude) • Water budget (concept—not actual budget) 	<p>Astronomy (17 days)</p> <ul style="list-style-type: none"> • Phases of the moon • Solar system - eccentricity • Tides • Celestial observations, HR diagram 	<p>Review (10 days)</p> <ul style="list-style-type: none"> • First term topics • Regents exam prep

All students should be familiar with the Earth Science Reference Tables (ESRT). Each student should have his/her own, or at least have them available in every class. Approximately 40% of all Regents exam questions come from the reference tables. Tables can be obtained in quantity (free) from the New York State Education Department by sending a fax to 518 474-1989. They may also be obtained on line at <http://www.nysedregents.org/testing/reftable/reftable.html>

Scientific Inquiry (e.g. asking questions, making discoveries, gathering data, analyzing explanations, and communication) is an integral component of this course

LIVING ENVIRONMENT

First Term - September through January				
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Scientific Inquiry (10 days) <ul style="list-style-type: none"> • The role of scientific inquiry in studying biology • The methods of science • Forensic Science investigations • Problem-based learning 	Origin of Life (3 days)	Ecology (22 days) <ul style="list-style-type: none"> • Relationships • Interactions • Aquaculture 	Organization and Patterns in Life (20 days) <ul style="list-style-type: none"> • Cell structure • Cell Physiology • Cell Chemistry • Photosynthesis • Respiration • Diffusion and Osmosis • Mitosis 	Homeostasis and Immunity (25 days) <ul style="list-style-type: none"> • Body system overview • Homeostasis and feedback systems • Immune response

Second Term - February through June				
Unit 6	Unit 7	Unit 8	Unit 9	
Reproduction and Development (15 days) <ul style="list-style-type: none"> • Meiosis • Reproductive systems • Fertilization • Development • Stem cells 	Genetics and Biotechnology (25 days) <ul style="list-style-type: none"> • Mendel overview • DNA/ RNA • Protein synthesis • Diseases • Mutations • Bioengineering • Bioethics 	Evolution (15 days) <ul style="list-style-type: none"> • Natural selection • Evidence 	Human Influences on the Environment (15 days) <ul style="list-style-type: none"> • Positive influences • Negative influences 	Review (10 days) <ul style="list-style-type: none"> • First term topics • Regents exam prep

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PHYSICS

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Unit 1	Unit 2	Unit 3	Unit 4
Measurement and Mathematics (15 days) <ul style="list-style-type: none"> • Units • Tools in measurement • Scientific Notation • Evaluating Experimental Results • Graphing Data • Scalar and Vector Quantities • Solving Equations Using Algebra 	Mechanics (40 days) <ul style="list-style-type: none"> • Kinematics • Statics • Dynamics • Two-dimensional Motion and Trajectories • Uniform Circular Motion • Newton’s Universal Law of Gravitation • Friction • Momentum • The Simple Pendulum 	Energy (15 days) <ul style="list-style-type: none"> • Work and Energy • Forms of Energy • Potential Energy • Elastic Potential Energy • Kinetic Energy • Work-Energy Relationship 	Projects and Problem-Based Learning Activities (10 days)

Second Term-February through June			
Unit 5	Unit 6	Unit 7	
Electricity and Magnetism (25 days) <ul style="list-style-type: none"> • Electrostatics • Electric Fields • Electric Currents • Electric Circuits • Magnetism • Electromagnetic Induction 	Waves (25 days) <ul style="list-style-type: none"> • Introduction to Waves • Periodic Wave Phenomena • Light • The Electromagnetic Spectrum 	Modern Physics (20 days) <ul style="list-style-type: none"> • Wave-Particle Duality of Energy and Matter • Early Models of the atom • The nucleus • The Standard Model of Particle Physics 	Review (10 days) <ul style="list-style-type: none"> • First term topics • Regents exam prep

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CHEMISTRY

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<p>The Physical Nature of Matter (30 days)</p> <ul style="list-style-type: none"> • Definition of chemistry • Matter <ul style="list-style-type: none"> -particulate nature of matter - substances - mixtures • Phases of matter <ul style="list-style-type: none"> - gases - liquids - solids - effect of solute on solvent - calorimetry • Energy 	<p>Atomic Concepts (20 days)</p> <ul style="list-style-type: none"> • Atoms <ul style="list-style-type: none"> - History of atomic structure - Subatomic particles - Structure of atoms 	<p>Nuclear Chemistry (5 days)</p> <ul style="list-style-type: none"> • Radioactivity • Nuclear energy • Alternative energy sources • Medical applications 	<p>Chemical Bonding (20 days)</p> <ul style="list-style-type: none"> • Why atoms bond • Bonds between atoms • Molecular attraction • Solubility • Chemical formula 	<p>Periodicity (5 days)</p> <ul style="list-style-type: none"> • Development of the Periodic Table • Properties and trends of the elements
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Second Term- February through June				
Unit 6	Unit 7	Unit 8	Unit 9	Unit 10
<p>Moles/ Stoichiometry (12 days)</p> <ul style="list-style-type: none"> • Moles/Stoichiometry • Mole interpretation • Use of the mole concept • Solutions 	<p>Kinetics and Equilibrium (15 days)</p> <ul style="list-style-type: none"> • Kinetics • Equilibrium 	<p>Acids and Bases (15 days)</p> <ul style="list-style-type: none"> • Electrolytes • Acids & Bases • Acid – Base Reactions <p>Oxidation-Reduction (15 days)</p> <ul style="list-style-type: none"> • Redox • Electrochemistry 	<p>Carbon and Organic Chemistry (13 days)</p> <ul style="list-style-type: none"> • Carbon Chemistry • Classify, name & identify organic compounds based on structure, bond type • Properties of organic compounds • Reactions 	<p>Review (10 days)</p> <ul style="list-style-type: none"> • First term topics • Regents exam prep

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