

Science I

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<p>Nature of Science</p> <ul style="list-style-type: none"> ● Science and technology connections ● Understanding difference in hypotheses, theories, scientific laws ● Experimental design ● Metric system - convert between the metric system ● Interpret and build graphs 	<p>Energy and Motion</p> <ul style="list-style-type: none"> ● Temperature and heat ● Measuring thermal energy ● Thermal energy transfers - conduction, convection, radiation, and insulation ● Using heat to stay warm - using heating systems in our buildings ● Using heat to do work - internal and external combustion engines ● Simple machines - using them and calculating mechanical advantages 	<p>Nature of matter</p> <ul style="list-style-type: none"> ● States of matter ● Behavior of gases - Charles law, Boyle's law ● Properties of fluids ● Classification of matter ● Chemical vs physical properties and changes ● Structure of the atom ● Mass of atoms- properties ● Periodic table ● Chemical bonds ● Formulas and compound names 	<p>Weather and Atmosphere</p> <ul style="list-style-type: none"> ● Layers of the atmosphere ● Global winds - local winds ● Weather terminology basics - air pressure and temperature masses ● Weather patterns ● Tornadoes and hurricanes ● Solar system - components
<p>Energy and Motion</p> <ul style="list-style-type: none"> ● Newton's three laws of motion ● Motion and Speed, velocity and acceleration - connecting motion with forces and gravity ● Accelerated Motion, projectile and circular motion, technology with satellites ● Energy and Work 	<p>Semester Review</p> <p>Semester Exam</p>		<p>Semester Review</p> <p>Semester Exam</p>

Biology I

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<p>Biology and you</p> <ul style="list-style-type: none"> ● Themes in biology ● Biology in your world ● Scientific processes 	<p>Photosynthesis and cellular respiration</p> <ul style="list-style-type: none"> ● Energy and living things ● Photosynthesis ● Cellular respiration 	<p>Viruses and bacteria</p> <ul style="list-style-type: none"> ● Viruses ● bacteria 	<p>Simple Invertebrates</p> <ul style="list-style-type: none"> ● Sponges ● Cnidarians ● Flatworms and roundworms
<p>Chemistry of life</p> <ul style="list-style-type: none"> ● Nature of matter ● Water and solutions ● Chemistry of cells ● Energy and chemical reactions 	<p>Chromosomes and cell reproduction</p> <ul style="list-style-type: none"> ● Chromosomes ● The cell cycle ● Mitosis cytokinesis 	<p>Protists</p> <ul style="list-style-type: none"> ● Characteristics of protists ● Protist diversity ● Protists and health 	<p>Mollusks and Annelids</p> <ul style="list-style-type: none"> ● Mollusks ● Annelids
<p>Cells and their environment</p> <ul style="list-style-type: none"> ● Passive transport ● Active transport 	<p>Mendel and heredity</p> <ul style="list-style-type: none"> ● The origins of genetics ● Mendel's theory ● Studying heredity ● Complex patterns of heredity 	<p>Fungi</p> <ul style="list-style-type: none"> ● Characteristics of fungi ● Fungal diversity ● Fungal partnerships 	<p>Arthropods</p> <ul style="list-style-type: none"> ● Features of Arthropods ● Spiders and other arachnids ● Insects and their relatives ● crustaceans
<p>Cell structure</p> <ul style="list-style-type: none"> ● Looking at cells ● Cell features ● Cell organelles 	<p>DNA: The genetic material</p> <ul style="list-style-type: none"> ● Identifying the genetic material ● The structure of DNA ● The replication of DNA ● From Genes to proteins 	<p>Introduction to Animals</p> <ul style="list-style-type: none"> ● Characteristics of animals ● Animal body systems 	<p>Echinoderms and Invertebrate Chordates</p> <ul style="list-style-type: none"> ● Echinoderms ● Invertebrate chordates

Biology II

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<p>Introduction to Anatomy and physiology</p> <ul style="list-style-type: none"> ● Anatomy and physiology ● Characteristics of life ● Maintenance of life ● Levels of organization ● Organization of the human body ● Anatomical terminology 	<p>Tissues</p> <ul style="list-style-type: none"> ● Tissue introduction ● Epithelial tissue ● Connective tissue ● Muscle tissue ● Nervous tissue 	<p>Nervous system</p> <ul style="list-style-type: none"> ● General functions of the nervous system ● Neuron structure ● Types of neurons and neuroglial cells ● Cell membrane potential ● Nerve impulse ● The synapse ● Impulse processing ● Types of nerves ● Nerve pathways ● Spinal cord ● Brain ● Peripheral nervous system ● Autonomic nervous system 	<p>Urinary system</p> <ul style="list-style-type: none"> ● Introduction ● Kidneys ● Urine formation ● Urine elimination
<p>Chemical basis of life</p> <ul style="list-style-type: none"> ● Structure of matter ● Chemical constituents of cells 	<p>Skin and the Integumentary system</p> <ul style="list-style-type: none"> ● Types of membranes ● Skin and its tissues ● Accessory organs of the skin ● Regulation of body temperature ● Healing of wounds 	<p>Digestive system</p> <ul style="list-style-type: none"> ● Introduction of the digestive system ● General characteristics of the alimentary canal ● Salivary glands-large intestine ● Carbohydrates - proteins ● Vitamins ● Minerals ● Adequate diets 	<p>Reproductive system</p> <ul style="list-style-type: none"> ● Organs of the male reproductive system ● Hormonal control of male reproductive system ● Organ of the female reproductive system ● Hormonal control of the female reproductive system
<p>Cells</p> <ul style="list-style-type: none"> ● Composite cell ● Movements through cell 	<p>Skeletal System</p> <ul style="list-style-type: none"> ● Bone structure ● Bone development and 	<p>Circulatory system</p> <ul style="list-style-type: none"> ● Introduction ● Structure of the heart 	<p>Pregnancy, growth, and development</p> <ul style="list-style-type: none"> ● Introduction

<p>membrane</p> <ul style="list-style-type: none"> • The cell cycle 	<p>growth</p> <ul style="list-style-type: none"> • Bone function • Skeletal organization • Skull - lower limb • Joints 	<ul style="list-style-type: none"> • Heart action • Blood vessels • Blood pressure • Paths and circulation • Arterial system-venous system 	<ul style="list-style-type: none"> • Pregnancy • Prenatal period • Postnatal period • Genetics
<p>Cellular metabolism</p> <ul style="list-style-type: none"> • Metabolic reactions • Control of metabolic reactions • Energy for metabolic reactions • Metabolic pathways • Nucleic acids and protein synthesis 	<p>Muscular system</p> <ul style="list-style-type: none"> • Structure of a Skeletal muscle • Skeletal muscle contraction • Muscular response • Smooth muscle • Cardiac muscle • Skeletal muscle actions 		

Chemistry I

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<p>Chemistry and matter</p> <ul style="list-style-type: none"> ● Overview of chemistry as a science ● Overview of matter ● Overview of the periodic table/elements 	<p>Periodic table and its trends</p> <ul style="list-style-type: none"> ● In depth look at elements and groups ● Group power point presentations ● Periodic trends of the table 	<p>Chemical equations/reactions</p> <ul style="list-style-type: none"> ● Recognize and understand different types of chemical reactions ● Write and balance equations representing reactions ● Label reactants/products ● Use solubility table ● Use activity series to predict products of reactions 	<p>Volume-mass relationships of gases</p> <ul style="list-style-type: none"> ● Ideal gas law calculations ● Gas stoichiometry ● effusion/diffusion
<p>Measurements and calculations</p> <ul style="list-style-type: none"> ● Basic scientific method ● Calculations involving SI units and metric conversions ● Significant figures 	<p>Chemical Bonding</p> <ul style="list-style-type: none"> ● Ionic, covalent and metallic bonds ● Intermolecular forces ● Be able to draw Lewis structures and recognize and develop 3D molecules 	<p>Stoichiometry</p> <ul style="list-style-type: none"> ● Basic stoichiometric calculations ● Calculate limiting reactant ● Calculate percent yield 	<p>Liquids and solids</p> <ul style="list-style-type: none"> ● Kinetic molecular theory of L and S properties ● Crystalline vs Amorphous ● Phase diagrams ● Properties of water
<p>Basic atomic and subatomic structure</p> <ul style="list-style-type: none"> ● Dalton and history of atomic structure 	<p>Nomenclature/formulas</p> <ul style="list-style-type: none"> ● Be able to name and write formulas for ionic and covalent 	<p>Gases</p> <ul style="list-style-type: none"> ● Kinetic molecular theory and physical traits of gases 	<p>Solutions and mixtures</p> <ul style="list-style-type: none"> ● Solution, colloid, suspension properties

<ul style="list-style-type: none"> ● Calculations involving atomic and mass numbers ● mole/Avagadro's number calculations 	<p>compounds</p> <ul style="list-style-type: none"> ● Oxidation numbers for molecules and polyatomic ions ● Calculate percent composition and empirical formulas for compounds 	<ul style="list-style-type: none"> ● Pressure ● Calculations using gas laws ● Descriptive chemistry of gases 	<ul style="list-style-type: none"> ● Calculation of solution concentration
<p>Electromagnetic radiation and electron configurations</p> <ul style="list-style-type: none"> ● History of light and electromagnetic spectrum ● Early 20th century quantum theory/history ● Calculations wavelength, frequency and energy ● Electron configurations 			<p>Colligative properties</p> <ul style="list-style-type: none"> ● Net ionic equations and spectator ions ● Properties of acids/bases, indicators, and pH ● Calculate pH ● Titration calculations

Chemistry II

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<p>Chemical Foundations</p> <ul style="list-style-type: none"> ● Chemical overview and scientific methods ● Units of measurement ● Uncertainty in measurement ● Significant figures in calculations ● Dimensional analysis ● Temperature ● Density ● Classification of matter 	<p>Stoichiometry</p> <ul style="list-style-type: none"> ● Average atomic mass ● Mole relationships ● Mole day 	<p>Atomic structure and periodicity</p> <ul style="list-style-type: none"> ● Electromagnetic radiation ● Nature of matter ● Bohr model ● Quantum mechanical model ● Quantum numbers ● Notations of electrons ● Periodic table 	<p>Spontaneity, entropy, free energy and phase changes</p> <ul style="list-style-type: none"> ● Spontaneous processes ● Effect of temperature ● Free energy ● Phase diagrams ● Heating/cooling curves
<p>Atoms, molecules and ions</p> <ul style="list-style-type: none"> ● History of chemistry ● Atomic structure ● Parts of periodic table ● Naming simple compounds ● Writing chemical formulas of simple compounds ● Parts of chemical equations ● Balance chemical equations 	<p>Types of chemical reactions and solution stoichiometry</p> <ul style="list-style-type: none"> ● Composition of aqueous solutions ● Precipitation reactions ● Stoichiometry of precipitation ● Acid-base reactions ● Redox reactions ● Balancing redox reactions 	<p>Bonding: general concepts</p> <ul style="list-style-type: none"> ● Types of chemical bonds ● Electronegativity ● Bond polarity and dipole moments ● Ions: electron configurations ● Energy effects in binary ionic ● Covalent bond model ● Covalent bond energies and chemical reactions ● Lewis structures ● Resonance 	<p>Chemical Kinetics and chemical equilibrium</p> <ul style="list-style-type: none"> ● Reaction process ● Reaction rates ● Rate laws ● Equilibrium condition ● Equilibrium constant ● Equilibrium expressions ● Heterogeneous equilibrium ● Solving equilibrium problems ● LeChatelier's principle

		<ul style="list-style-type: none"> ● VSEPR model 	
<p>Nuclear chemistry</p> <ul style="list-style-type: none"> ● Nuclear equations ● Half-life ● Geiger counter ● Nuclear binding energy ● Nuclear applications 	<p>Electrochemistry</p> <ul style="list-style-type: none"> ● Galvanic cells ● Determine cell potential ● Types of batteries 	<p>Thermochemistry</p> <ul style="list-style-type: none"> ● Nature of energy ● Enthalpy and calorimetry ● Hess' law ● Standard enthalpies of formation ● Energy sources 	<p>Properties of solutions, acids and bases and applications of aqueous equilibria</p> <ul style="list-style-type: none"> ● Solution composition ● Solution formation ● Factors affecting solubility ● Colligative properties of nonelectrolytic solutions ● Colligative properties of electrolytic solutions ● Acid/base properties ● Acidic strength ● The pH scale ● Acid/base indicators ● Solubility product ● Precipitation
	<p>Gases</p> <ul style="list-style-type: none"> ● Pressure ● Gas laws ● Gas stoichiometry ● Dalton's law of partial pressures ● Kinetic molecular theory of gases ● Effusion and diffusion ● Real gases 		<p>Introduction to organic chemistry</p> <ul style="list-style-type: none"> ● Alkanes ● Alkenes and alkynes ● Aromatic hydrocarbons ● Line formulas ● Polymers

Physics

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Significant figures	Circular motion	Rotational Motion	Waves and Sound
Vectors	Energy, work and Power	Statics/materials	Specific heat
Velocity/acceleration	Momentum	Fluids	Electricity
Forces			

AP Biology Scope and Sequence

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Survival Chemistry	Cellular Respiration <ul style="list-style-type: none"> • Cell Respiration pea lab and Fermentation lab 	DNA Technology <ul style="list-style-type: none"> • Gel electrophoresis size determination • Transformation 	Fungus <ul style="list-style-type: none"> • Microscope lab and Practicum
Water <ul style="list-style-type: none"> • Inquiry Growing lab 	Photosynthesis <ul style="list-style-type: none"> • Floating Disc • Pigment absorption and pigment chromatography labs 	Darwin	Invertebrates <ul style="list-style-type: none"> • Practicum and insect collection
Carbon	Mitosis	Population Genetics <ul style="list-style-type: none"> • HMS Beagle Computer lab • Population genetics lab • Chi Square genetic corn lab 	Vertebrates <ul style="list-style-type: none"> • Practicum and dissections
Macromolecules <ul style="list-style-type: none"> • Model building activity • Carb and Fat activity • Burning nut energy lab 	Meiosis <ul style="list-style-type: none"> • Microscope slide work 	Viruses	AP and ACT Review <ul style="list-style-type: none"> • AP Central and KC GIS Module
Metabolism Intro <ul style="list-style-type: none"> • Jello enzyme lab 	Mendelian Genetics <ul style="list-style-type: none"> • Genetic Family Tree 	Prokaryotes <ul style="list-style-type: none"> • Bacteria collecting and analysis and gram stain lab 	
Cell and its organelles <ul style="list-style-type: none"> • Organelle Campaign Poster 	Chromosomal inheritance <ul style="list-style-type: none"> • Virtual Fly lab 	Protists <ul style="list-style-type: none"> • Microscope protist analysis • Slime Mold growing activity 	
Membrane <ul style="list-style-type: none"> • Cell Surface area activity • Potato Osmosis activity 	DNA	Plants (non seeds)	
	Transcription/translation	Plants (seeds) <ul style="list-style-type: none"> • Flower dissection • Plant Practicum 	