

# CURRICULUM MAP

Subject: Earth Science

Grade Level: 9th

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>UNIT 1: EARTH DIMENSIONS (1,3,4,6)</b>            Introduction              -metric system, density, graphing            Description of earth</p> <ul style="list-style-type: none"> <li>• Shape - oblate spheroid</li> <li>• Size - diameters</li> <li>• Parts - atom hydro lithosphere</li> <li>• Maps               <ul style="list-style-type: none"> <li>○ latitude &amp; longitude</li> <li>○ field maps &amp; isolines</li> <li>○ topo maps                   <ul style="list-style-type: none"> <li>▪ contour lines</li> <li>▪ gradient</li> </ul> </li> </ul> </li> </ul> <p><b>UNIT 2: ROCKS &amp; MINERALS (1,4)</b></p> <ul style="list-style-type: none"> <li>• Earth composition               <ul style="list-style-type: none"> <li>○ mineral resources</li> <li>○ rocks - composed of minerals</li> </ul> </li> <li>• Minerals               <ul style="list-style-type: none"> <li>○ identification &amp; classification</li> <li>○ arrangements &amp; bonding</li> </ul> </li> <li>• Igneous               <ul style="list-style-type: none"> <li>○ origin</li> <li>○ texture, comp.</li> <li>○ intrusive &amp; extrusive</li> </ul> </li> <li>• Sedimentary               <ul style="list-style-type: none"> <li>○ origin</li> <li>○ types - clastic, chemical, organic</li> </ul> </li> <li>• Metamorphic               <ul style="list-style-type: none"> <li>○ origin</li> <li>○ characteristics &amp; types</li> </ul> </li> <li>• Conservation</li> <li>• Current Events               <ul style="list-style-type: none"> <li>○ Articles</li> </ul> </li> </ul>	<p><b>UNIT 3: SURFACE PROCESSES &amp; LANDSCAPES (1,3,6)</b></p> <ul style="list-style-type: none"> <li>• Weathering               <ul style="list-style-type: none"> <li>○ physical &amp; chemical</li> <li>○ particles &amp; surface area</li> <li>○ mineral composition</li> </ul> </li> <li>• Weathering products               <ul style="list-style-type: none"> <li>○ soil</li> <li>○ human influences</li> </ul> </li> <li>• Erosion               <ul style="list-style-type: none"> <li>○ residual vs. transported</li> <li>○ agents</li> <li>○ particles vs. stream velocity</li> </ul> </li> <li>• Deposition - size, shape, density</li> <li>• Land forms - climate, rocks &amp; structures</li> </ul> <p><b>UNIT 4: DYNAMIC CRUST (1,2,3,5,6)</b></p> <ul style="list-style-type: none"> <li>• Earthquakes               <ul style="list-style-type: none"> <li>○ zones of activity</li> <li>○ p &amp; s waves</li> <li>○ epicenters</li> </ul> </li> <li>• Earth's interior               <ul style="list-style-type: none"> <li>○ density &amp; temp/w depth</li> <li>○ seismic &amp; meteorite evidence</li> </ul> </li> <li>• Plate movements               <ul style="list-style-type: none"> <li>○ rock &amp; fossil correlations</li> <li>○ heat flow</li> <li>○ hot spots</li> <li>○ rifting, subdivision, faults</li> </ul> </li> <li>• Properties of crust               <ul style="list-style-type: none"> <li>○ ocean bottom - basaltic</li> <li>○ continent - granite</li> </ul> </li> </ul>	<p><b>UNIT 5: EARTH HISTORY (4)</b></p> <ul style="list-style-type: none"> <li>• Geological sequence               <ul style="list-style-type: none"> <li>○ igneous - intrusion/extrusions</li> <li>○ faults &amp; folds are younger</li> </ul> </li> <li>• Correlation               <ul style="list-style-type: none"> <li>○ walking the out</li> <li>○ index fossils</li> <li>○ violence ash</li> </ul> </li> <li>• Geologic history               <ul style="list-style-type: none"> <li>○ time scale</li> <li>○ buried erosion surface</li> <li>○ wind - magnitude &amp; direction</li> </ul> </li> <li>• Absolute ages</li> <li>• Evolution</li> </ul> <p><b>UNIT 6: METEOROLOGY (1,2,3,4,5,6)</b></p> <ul style="list-style-type: none"> <li>• Description &amp; measurement               <ul style="list-style-type: none"> <li>○ daily temp. &amp; dew point</li> <li>○ relative humidity</li> <li>○ wind magnitude &amp; direction</li> </ul> </li> <li>• Relations among variables</li> <li>• Clouds               <ul style="list-style-type: none"> <li>○ adiabatic cooling concept</li> <li>○ cooling before dew point</li> </ul> </li> <li>• Weather maps               <ul style="list-style-type: none"> <li>○ isolines</li> <li>○ fronts</li> </ul> </li> <li>• Forecasting               <ul style="list-style-type: none"> <li>○ movement of air masses</li> <li>○ geographic origin of air</li> <li>○ cyclones/anticyclones</li> <li>○ probability predictions</li> </ul> </li> <li>• Hazardous weather</li> </ul>	<p><b>UNIT 7: WATER CYCLE &amp; CLIMATES (1,3,4,6)</b></p> <ul style="list-style-type: none"> <li>• Sources of water               <ul style="list-style-type: none"> <li>○ oceans - major source</li> <li>○ water cycle</li> </ul> </li> <li>• Solar energy               <ul style="list-style-type: none"> <li>○ sun - major source</li> <li>○ intensity &amp; angle</li> <li>○ seasons</li> <li>○ day length</li> <li>○ greenhouse effect</li> </ul> </li> <li>• Climate factors               <ul style="list-style-type: none"> <li>○ uses of water budget</li> <li>○ effects of latitude &amp; altitude</li> <li>○ prevailing winds</li> <li>○ mountain barriers</li> </ul> </li> <li>• Water quality</li> </ul> <p><b>UNIT 8: ASTRONOMY (1,2,3,4,6)</b></p> <ul style="list-style-type: none"> <li>• Celestial observations               <ul style="list-style-type: none"> <li>○ sun's path</li> <li>○ earth's rotation</li> <li>○ constellations</li> <li>○ geocentric - heliocentric theory</li> </ul> </li> <li>• Revolution with tilt               <ul style="list-style-type: none"> <li>○ sun's path with season/latitude</li> <li>○ noon position</li> <li>○ changing positions of sunrise &amp; sunset</li> <li>○ seasons</li> </ul> </li> <li>• Cosmic features</li> <li>• Earth in universe</li> </ul>

# CURRICULUM MAP

Subject: Regents Biology

Grade Level: 10th

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>UNIT 1: INTRO &amp; CLASSIFICATIONS</b></p> <ul style="list-style-type: none"> <li>• Life activities</li> <li>• Scheme for taxonomy</li> <li>• 6 kingdoms</li> <li>• Divisions of</li> <li>• Tools of biology - microscope</li> </ul> <p><b>UNIT 2: CELLS</b></p> <ul style="list-style-type: none"> <li>• Parts of cells</li> <li>• Transport across the membrane</li> </ul> <p><b>UNIT 3: CHEM OF LIFE</b></p> <ul style="list-style-type: none"> <li>• Atoms/Molecules</li> <li>• Bonding</li> <li>• pH</li> <li>• Functional groups</li> <li>• Types of organic compds. (4 types)</li> <li>• Types of reactions</li> <li>• Enzymes</li> </ul> <p><b>UNIT 4: PHOTO/CELL RESPIRATION</b></p> <ul style="list-style-type: none"> <li>• Autotrophic vs. heterotrophic nutrition</li> <li>• Details of photosynthesis</li> <li>• Structure of leaf</li> <li>• Chemical reaction of cell resp. (anaerobic, aerobic respir.)</li> <li>• ATP &amp; ADP</li> </ul> <p><b>UNIT 5: GAS EXCHANGE/CIRCULATION</b></p> <ul style="list-style-type: none"> <li>• Adaptations in represent. Orgs – resp &amp; circ.</li> <li>• Struct &amp; func of human circ system including path of circulation</li> <li>• Struc &amp; function of res system</li> </ul>	<p><b>UNIT 6: Immunity</b></p> <ul style="list-style-type: none"> <li>• Components of blood</li> <li>• Immune system</li> </ul> <p><b>UNIT 7: Digestion/Excretion</b></p> <ul style="list-style-type: none"> <li>• Types of nutrition</li> <li>• Comparisons of structure &amp; processes in “type” organisms</li> <li>• Nutrients (role of)</li> <li>• Structure &amp; func of digestive system</li> <li>• Malfunctions</li> </ul> <p><b>UNIT 8: Endocrine/locomotion</b></p> <ul style="list-style-type: none"> <li>• Struc &amp; function of locomotion sy</li> <li>• Adaptations for locomotion</li> <li>• Malfunctions</li> <li>• Endocrine System</li> <li>• adaptations for chem. reg.</li> <li>• Malfunctions</li> </ul> <p><b>UNIT 9: NERVOUS SYSTEM</b></p> <ul style="list-style-type: none"> <li>• Nervous system</li> <li>• transmission of impulses</li> <li>• adaptation for nerv reg.</li> <li>• CNS</li> <li>• Peripheral N.S.</li> <li>• Behavior</li> <li>• Malfunctions</li> </ul>	<p><b>UNIT 10: ASEXUAL REPRODUCTION</b></p> <ul style="list-style-type: none"> <li>• Mitosis</li> <li>• Types of asexual reproduction</li> </ul> <p><b>UNIT 11: SEXUAL REPRODUCTION</b></p> <ul style="list-style-type: none"> <li>• Meiosis (comp &amp; contrast)</li> <li>• Sexual reproduction in represent. organisms</li> <li>• Zygote form/cleavage</li> <li>• Patterns of reproduction (int vs. ext fertilization &amp; development)</li> </ul> <p><b>UNIT 12: HUMAN / PLANT REPRO/ DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• Human reproduction: male &amp; female</li> <li>• Menstrual cycle</li> <li>• Fert./develop - humans</li> <li>• AIDS - awareness</li> <li>• Flower parts including fertilization</li> <li>• Fruits/seeds</li> </ul> <p><b>UNIT 13: GENETICS I</b></p> <ul style="list-style-type: none"> <li>• Mendel’s law</li> <li>• Gene</li> <li>• Recessive/ dominant traits</li> <li>• Linkage</li> <li>• Gene mapping</li> </ul> <p><b>UNIT 14: MOLECULAR GENETICS</b></p> <ul style="list-style-type: none"> <li>• DNA structure &amp; function</li> <li>• RNA</li> </ul> <p>Protein synthesis</p>	<p><b>UNIT 15: APPLIED GENETICS</b></p> <ul style="list-style-type: none"> <li>• Mutations</li> <li>• Human genetics</li> <li>• Genetic engineering</li> <li>• Sex linked traits</li> <li>• Multiple alleles</li> </ul> <p><b>UNIT 16: EVOLUTION</b></p> <ul style="list-style-type: none"> <li>• Darwin - Larmack &amp; other theories</li> <li>• Modern theory of evolution</li> </ul> <p><b>UNIT 17: ECOLOGY</b></p> <ul style="list-style-type: none"> <li>• Environmental factors</li> <li>• biotic</li> <li>• abiotic</li> <li>• Nutritional relationships</li> <li>• Pyramid: mass/energy</li> <li>• Cycles of materials</li> <li>• Ecosystems</li> <li>• Biomes</li> <li>• Human inference/restoration</li> </ul>

# CURRICULUM MAP

Subject: General Biology

Grade Level: 10<sup>th</sup>

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>THE STUDY OF LIFE</b></p> <ul style="list-style-type: none"> <li>● Features of living things</li> <li>● Tools of biology</li> <li>● Measurements</li> <li>● Scientific method</li> </ul> <p><b>FEATURES OF A CELL</b></p> <ul style="list-style-type: none"> <li>● Features of living things</li> <li>● Chemistry of life</li> <li>● Cell theory</li> <li>● Cell parts and their jobs</li> <li>● Cell processes, dif. &amp; osm.</li> <li>● Organization</li> </ul> <p><b>CLASSIFICATION</b></p> <ul style="list-style-type: none"> <li>● Grouping</li> <li>● Methods</li> <li>● Modern classification</li> <li>● Evidence used in classification</li> <li>● Scientific names</li> </ul> <p><b>RESPIRATION, EXCRETION &amp; SYNTHESIS</b></p> <ul style="list-style-type: none"> <li>● Chemical reaction of cell resp. (anaerobic, aerobic respir.)</li> <li>● Adaptations in represent organisms (for resp. and excretion)                             <ul style="list-style-type: none"> <li>● Role of Synthesis - Types of Com</li> </ul> </li> </ul>	<p><b>HUMAN NUTRITION</b></p> <ul style="list-style-type: none"> <li>● Nutrients (role of)</li> <li>● Structure &amp; func of digestive system</li> <li>● Malfunctions</li> </ul> <p><b>HUMAN TRANSPORT</b></p> <ul style="list-style-type: none"> <li>● Struct &amp; func of human circ system including path of circulation</li> <li>● Components of blood</li> <li>● Malfunctions</li> </ul> <p><b>HUMAN RESPIRATION/EXCRETION &amp; LOCOMOTION</b></p> <ul style="list-style-type: none"> <li>● Struc &amp; function of res system</li> <li>● Struc &amp; function of excretion sys</li> <li>● Struc &amp; function of locomotion sy</li> <li>● Adaptations for locomotion</li> <li>● Malfunctions</li> </ul> <p><b>REGULATION</b></p> <ul style="list-style-type: none"> <li>● Nervous system                             <ul style="list-style-type: none"> <li>○ transmission of impulses</li> <li>○ adaptation for nerv reg.</li> </ul> </li> <li>● Chemical Regulation                             <ul style="list-style-type: none"> <li>○ endocrine</li> <li>○ adaptations for chem. reg.</li> </ul> </li> </ul>	<p><b>CELL REPRODUCTION</b></p> <ul style="list-style-type: none"> <li>● Mitosis</li> <li>● Meiosis</li> <li>● Aging &amp; caveer</li> </ul> <p><b>PLANT REPRODUCTION &amp; DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>● Asexual repro in plants (roots, leaves, stems)</li> <li>● Sexual repro in plants                             <ul style="list-style-type: none"> <li>○ flowers</li> <li>○ pollination and fertilization</li> </ul> </li> <li>● Plant development                             <ul style="list-style-type: none"> <li>○ seeds</li> <li>○ fruits</li> <li>○ dev. from seeds</li> </ul> </li> </ul> <p><b>ANIMAL REPRODUCTION</b></p> <ul style="list-style-type: none"> <li>● Asexual repro</li> <li>● Sexual repro                             <ul style="list-style-type: none"> <li>○ external &amp; internal repro.</li> <li>○ human repro. (stages, menstrual cycle, diseases of repro system)</li> </ul> </li> </ul> <p><b>ANIMAL DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>● Dev. inside the female                             <ul style="list-style-type: none"> <li>○ human development</li> <li>○ human birth</li> </ul> </li> <li>● Development outside the female                             <ul style="list-style-type: none"> <li>○ eggs that are laid</li> <li>○ needs of the embryo</li> </ul> </li> <li>● Metamorphosis                             <ul style="list-style-type: none"> <li>○ frog metamorphosis</li> <li>○ insect metamorphosis</li> </ul> </li> </ul>	<p><b>INHERITANCE OF TRAITS</b></p> <ul style="list-style-type: none"> <li>● Genetics                             <ul style="list-style-type: none"> <li>○ chromosomes &amp; genes</li> <li>○ passing traits to offspring</li> <li>○ dominance/Recessiveness</li> </ul> </li> <li>● Expected vs. observed results                             <ul style="list-style-type: none"> <li>○ Punnett square</li> <li>○ exported results</li> <li>○ observed results</li> </ul> </li> </ul> <p><b>HUMAN GENETICS</b></p> <ul style="list-style-type: none"> <li>● The role of chromosomes                             <ul style="list-style-type: none"> <li>○ chromosome #</li> <li>○ sex a genetic trait</li> </ul> </li> <li>● Human traits                             <ul style="list-style-type: none"> <li>○ incomplete dominance</li> <li>○ blood types</li> <li>○ genes on x-chromosome</li> </ul> </li> <li>● Genetic disorders                             <ul style="list-style-type: none"> <li>○ errors in chromosome number</li> <li>○ genetic disorders &amp; sex chromosomes</li> <li>○ genetic disorders &amp; autosomes</li> </ul> </li> </ul> <p><b>EVOLUTION</b></p> <ul style="list-style-type: none"> <li>● Changes in living things                             <ul style="list-style-type: none"> <li>○ adaptations &amp; survival</li> <li>○ natural selection, mutation, species formation</li> <li>○ primate &amp; human evolution</li> <li>○ Darwin's work - fossils, vestigial structures, embryos, DNA</li> </ul> </li> </ul> <p><b>POPULATION &amp; COMMUNITIES</b></p> <ul style="list-style-type: none"> <li>● Population size &amp; arrangement</li> <li>● Changes and limits of pop. size</li> <li>● Communities                             <ul style="list-style-type: none"> <li>○ producers, consumers, decomposers</li> <li>○ energy in a community</li> <li>○ food chains &amp; energy flow</li> <li>○ mutualism, commensalisms</li> <li>○ parasitism &amp; predation</li> </ul> </li> </ul>

# CURRICULUM MAP

Subject: General Chemistry

Grade Level: 11th

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>INTRODUCTION TO CHEMISTRY</b>  <i>Scientific Method</i></p> <ul style="list-style-type: none"> <li>• Metric System</li> <li>• Measurement               <ul style="list-style-type: none"> <li>○ area</li> <li>○ volume</li> <li>○ density</li> </ul> </li> </ul> <p><b>PROPERTIES OF MATTER</b></p> <ul style="list-style-type: none"> <li>• Physical properties</li> <li>• Chemical properties</li> </ul> <p><b>CLASSES OF MATTER</b></p> <ul style="list-style-type: none"> <li>• Elements               <ul style="list-style-type: none"> <li>○ Metals &amp; nonmetals</li> <li>○ Metalloids</li> </ul> </li> <li>• Compounds               <ul style="list-style-type: none"> <li>○ Acids, bases, salts &amp; pH</li> <li>○ Organic compounds</li> </ul> </li> <li>• Mixtures               <ul style="list-style-type: none"> <li>○ Solutions</li> <li>○ Suspensions</li> <li>○ Colloids</li> </ul> </li> </ul> <p><b>ATOMIC STRUCTURE</b>  <b>Historical model of atom</b></p> <ul style="list-style-type: none"> <li>• Modern model</li> <li>• Spectra</li> <li>• Isotopes</li> </ul> <p><b>PERIODIC TABLE</b>  <i>Arrangement</i></p> <ul style="list-style-type: none"> <li>• History</li> <li>• Groups</li> <li>• Trends</li> </ul>	<p><b>BONDING</b></p> <ul style="list-style-type: none"> <li>• Ionic bond</li> <li>• Covalent bond</li> <li>• Metallic bond</li> <li>• Electronegativity</li> </ul> <p><b>CHEMICAL REACTIONS</b>  <i>Formulas</i></p> <ul style="list-style-type: none"> <li>• Balancing equations</li> <li>• Energy &amp; reactions               <ul style="list-style-type: none"> <li>○ Activation</li> <li>○ Exo/endothermic reactions</li> <li>○ Heat of formation</li> </ul> </li> <li>• Reaction rates</li> </ul> <p><b>TYPES OF REACTIONS</b></p> <ul style="list-style-type: none"> <li>• Synthesis</li> <li>• Decomposition</li> <li>• Single &amp; double replacement</li> </ul> <p><b>PHASES OF MATTER</b>            Temperature</p> <ul style="list-style-type: none"> <li>• Phases</li> <li>• Change of Phase</li> </ul>	<p><b>GAS &amp; PRESSURE</b></p> <ul style="list-style-type: none"> <li>• Definitions</li> </ul> <p><i>Applications</i></p> <p><b>QUALITATIVE RELATIONSHIPS</b>  <i>Mole concept</i></p> <ul style="list-style-type: none"> <li>• Mass relationships               <ul style="list-style-type: none"> <li>○ Symbols</li> <li>○ Formulas</li> <li>○ Equations</li> </ul> </li> <li>• Volume Relationships               <ul style="list-style-type: none"> <li>○ Mole volume</li> <li>○ Combining volumes</li> </ul> </li> </ul> <p><b>SOLUTIONS</b></p> <ul style="list-style-type: none"> <li>• Rate of dissolving</li> <li>• Solubility               <ul style="list-style-type: none"> <li>○ Nature of solute &amp; solvent</li> <li>○ Effect of temperature &amp; pressure</li> </ul> </li> </ul> <p><b>Acids &amp; Bases</b></p> <ul style="list-style-type: none"> <li>• Properties</li> <li>• Definitions               <ul style="list-style-type: none"> <li>○ Arrhenius</li> <li>○ Bronsted-Lowery</li> </ul> </li> <li>• Properties</li> <li>• Indicators</li> <li>• Reactions</li> </ul>	<p><b>Redox</b></p> <ul style="list-style-type: none"> <li>• Oxidation numbers</li> <li>• Reactions</li> <li>• Applications</li> </ul> <p><b>Nuclear Chemistry</b></p> <ul style="list-style-type: none"> <li>• Radioactivity</li> <li>• Decay &amp; half-life</li> <li>• Nuclear reactions</li> <li>• Applications</li> </ul> <p><b>ORGANIC CHEMISTRY</b>            Definition &amp; properties</p> <ul style="list-style-type: none"> <li>• Structure               <ul style="list-style-type: none"> <li>○ Bonding</li> <li>○ Structural formulas</li> <li>○ Isomers</li> <li>○ Homologous series</li> </ul> </li> <li>• Classes of Compounds               <ul style="list-style-type: none"> <li>○ Hydrocarbons</li> <li>○ Functional groups</li> <li>○ Polymers</li> </ul> </li> </ul>

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rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>MATH SKILLS- VOCAB</b></p> <ul style="list-style-type: none"> <li>• Scientific notation</li> <li>• Metric system</li> <li>• Element names/symbols</li> </ul> <p><b>ATOMIC STRUCTURE</b></p> <ul style="list-style-type: none"> <li>• Part of atom</li> <li>• Rutherford model</li> <li>• Avogadro's # mole concept</li> <li>• Relative average at mass</li> </ul> <p><b>ELECTRON CONFIGURATIONS</b></p> <ul style="list-style-type: none"> <li>• Bohr model</li> <li>• Elec configuration notation</li> <li>• Orbital config. notation</li> <li>• Electron dot notation</li> <li>• Orbital model</li> <li>• Spectroscopy</li> <li>• Quantum numbers - Honors</li> </ul> <p><b>BONDING/ INTERPARTICLE BONDING/TABLE</b></p> <ul style="list-style-type: none"> <li>• Ionic bonding</li> <li>• Covalent bonding</li> <li>• Electronegativity</li> <li>• Molecular shape/dipole</li> <li>• Energy changes in bonding</li> <li>• Metallic crystal</li> <li>• Network crystal</li> <li>• Molecular crystal</li> <li>• Van der Waal's crystal</li> <li>• Ionic crystals</li> <li>• Melting/boiling points</li> <li>• Periodic table history</li> <li>• Groups and periods</li> <li>• Periodic trends</li> </ul>	<p><b>NAMING &amp; FORMULA WRITING</b></p> <ul style="list-style-type: none"> <li>• Oxidation rules</li> <li>• Formula writing</li> <li>• Polyatomic ions</li> <li>• IUPAC system</li> <li>• % composition</li> </ul> <p><b>EQUATION WRITING</b></p> <ul style="list-style-type: none"> <li>• Composition</li> <li>• Decomposition</li> <li>• Cation replacement</li> <li>• Anion replacement</li> <li>• Double replacement</li> <li>• Combustion</li> <li>• Electrolysis</li> <li>• Neutralization</li> </ul> <p><b>STOICHIONMETRY</b></p> <ul style="list-style-type: none"> <li>• Mass-mass</li> <li>• Mass-volume</li> <li>• Limiting/excess reagents</li> </ul> <p><b>GAS LAW MATERIAL</b></p> <ul style="list-style-type: none"> <li>• Kinetic molecular theory</li> <li>• Graham/Boyle/Charles' Laws</li> <li>• Avogadro's Law</li> <li>• Ideal gas law</li> <li>• Combined law</li> <li>• Density of gases</li> <li>• Pressure</li> <li>• Dalton's Law</li> <li>• Molecular weight and density</li> </ul>	<p><b>PHASES OF MATTER</b></p> <ul style="list-style-type: none"> <li>• Phase characteristics</li> <li>• Heating/cooling curves</li> <li>• Heat equation</li> <li>• Heat of fusion/vaporization</li> </ul> <p><b>SOLUTION CHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Solute/solvent</li> <li>• Solubility curves</li> <li>• Arrhenius theory</li> <li>• Energy changes</li> <li>• % concentration by mass</li> <li>• Molarity</li> <li>• Molality-Honors</li> <li>• Conductivity of solutions</li> <li>• Changes in f.pt/b.pt</li> </ul> <p><b>ACID/BASE THEORY</b></p> <ul style="list-style-type: none"> <li>• General Characteristics</li> <li>• Arrhenius theory</li> <li>• Bronsted-Lowry theory</li> <li>• Titrations</li> <li>• Naming acids/bases</li> <li>• pH and pOH scales</li> </ul> <p><b>KINETICS/EQUILIBRIUM</b></p> <ul style="list-style-type: none"> <li>• Potential energy diagrams</li> <li>• Enthalpy changes</li> <li>• React.rt./collision theory</li> <li>• Equilibrium</li> <li>• LeChatelier's principle</li> <li>• Rate law/equil/ constant</li> </ul>	<p><b>EQUIL. CONSTANTS/ SPONTINAITY</b></p> <ul style="list-style-type: none"> <li>• Ka and Kb (w. acid-Honors)</li> <li>• Kw</li> <li>• Ksp</li> <li>• Free energy change</li> </ul> <p><b>REDUCTION/ OXIDATION CHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Half reactions</li> <li>• Balancing redox equations</li> <li>• Electrochemical cells</li> <li>• Voltage</li> <li>• Electrolytic cells</li> </ul> <p><b>ORGANIC CHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Chemistry of carbon</li> <li>• Aliphatic series</li> <li>• Aromatic series</li> <li>• Naming</li> <li>• Functional groups</li> <li>• Substitution reactions</li> <li>• Addition reactions</li> <li>• Polymerization reactions</li> <li>• Esterification reactions</li> </ul> <p><b>RADIOACTIVITY</b></p> <ul style="list-style-type: none"> <li>• Particle/rays</li> <li>• Half life</li> <li>• Decay equation</li> <li>• Fusion/fission</li> <li>• Nuclear power plants</li> </ul>

# CURRICULUM MAP

Subject: AP Biology

Grade Level: 12<sup>th</sup>

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>CHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Atoms, molecules, bonding</li> <li>• Properties of water</li> <li>• Organic molecule types</li> <li>• Enzymes</li> </ul> <p><b>CELLS</b></p> <ul style="list-style-type: none"> <li>• Prokaryote/eukaryote</li> <li>• Organelles</li> <li>• Membrane properties</li> </ul> <p><b>PHOTOSYNTHESIS</b></p> <ul style="list-style-type: none"> <li>• Chloroplast structure</li> <li>• Light reactions</li> <li>• Dark reactions</li> <li>• Oxidative phosphorylation</li> <li>• Chemiosmotic theory</li> <li>• C4 reactions</li> </ul> <p><b>RESPIRATION</b></p> <ul style="list-style-type: none"> <li>• Glycolysis</li> <li>• Krebs cycle</li> <li>• ATP output</li> <li>• Mitochondrial membranes</li> <li>• Chemiosmotic theory</li> <li>• Anaerobic respiration</li> </ul>	<p><b>CELL DIVISION</b></p> <ul style="list-style-type: none"> <li>• Why cells divide</li> <li>• Stages of mitosis</li> <li>• Stages of meiosis</li> <li>• Sims/diffs between the two</li> <li>• Genetic variation</li> </ul> <p><b>HEREDITY &amp; GENETICS</b></p> <ul style="list-style-type: none"> <li>• History of genetics</li> <li>• Genetic crosses</li> <li>• Incomplete dominance</li> <li>• Multiple alleles</li> <li>• Epistasis</li> <li>• Linkage</li> <li>• Sex-linkage</li> <li>• Nondisjunction</li> <li>• Human genetics</li> </ul> <p><b>MOLUCULAR GENETICS</b></p> <ul style="list-style-type: none"> <li>• DNA structure/replication</li> <li>• RNA structure</li> <li>• Transcription/translation</li> <li>• viral/bacterial genetics</li> <li>• recombinant DNA</li> <li>• Regulation of gene expression</li> </ul> <p><b>EVOLUTION</b></p> <ul style="list-style-type: none"> <li>• Evidence</li> <li>• Natural selection</li> <li>• Sources of variation</li> <li>• Genetic equilibrium</li> <li>• Patterns of evolution</li> <li>• Origin of life</li> </ul>	<p><b>ANIMALS</b></p> <ul style="list-style-type: none"> <li>• Respiration</li> <li>• Circulation</li> <li>• Excretion</li> <li>• Digestion</li> <li>• Regulation</li> <li>• Support/movement</li> <li>• Immunity</li> </ul> <p><b>ANIMAL REPRO &amp; DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• Sexual differences</li> <li>• Human repro anatomy</li> <li>• Gametogenesis</li> <li>• Hormonal regulation</li> <li>Embryonic development</li> </ul>	<p><b>ANIMAL BEHAVIOR</b></p> <ul style="list-style-type: none"> <li>• Genetic basis</li> <li>• Kinds of behavior</li> <li>• Communication</li> <li>• Social behavior</li> </ul> <p><b>ECOLOGY</b></p> <ul style="list-style-type: none"> <li>• Population ecology</li> <li>• Communities</li> <li>• Ecosystems</li> <li>• Biomes</li> <li>• Ecological succession</li> <li>• Biogeochemical cycles</li> <li>• Human impact - biosphere</li> </ul> <p><b>LABORATORY REVIEW</b></p> <ul style="list-style-type: none"> <li>• AP Bio test review</li> <li>• Practice multiple choices</li> <li>• Sample essays</li> </ul> <p><b>SIX KINGDOM SURVEY</b></p> <ul style="list-style-type: none"> <li>• Bacteria</li> <li>• Archaea</li> <li>• Protista</li> <li>• Fungi</li> <li>• Plantae</li> <li>• Animalia</li> </ul> <p><b>PLANTS</b></p> <ul style="list-style-type: none"> <li>• Roots/stems/leaves</li> <li>• Transport of water/sugar</li> <li>• Hormones</li> <li>• Reproduction</li> <li>Tropisms</li> </ul>

# CURRICULUM MAP

Subject: Human Biology

Grade Level: 12th

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>ORGANIZATION OF HUMAN BODY</b></p> <ul style="list-style-type: none"> <li>• anatomical directions</li> <li>• plan of human body</li> <li>• levels of organization</li> <li>• body planes/cavities</li> <li>• body systems</li> </ul> <p><b>MECHANISMS OF DISEASE</b></p> <ul style="list-style-type: none"> <li>• causes</li> <li>• risk factors</li> <li>• prevention and control</li> <li>• cancers</li> </ul> <p><b>SKELETON-THE FRAMEWORK</b></p> <ul style="list-style-type: none"> <li>• structure of bone</li> <li>• axial skeleton</li> <li>• appendicular skeleton</li> <li>• joints and movement</li> <li>• disorders of skeletal system</li> </ul> <p><b>MUSCLE TISSUE</b></p> <ul style="list-style-type: none"> <li>• anatomy</li> <li>• sarcomere structure</li> <li>• sliding filament theory</li> <li>• energy requirements</li> <li>• disorders of the muscles</li> <li>• Muscular System               <ul style="list-style-type: none"> <li>○ types of movement</li> <li>○ muscles of axial skeleton</li> <li>○ disorders of muscular system</li> </ul> </li> </ul>	<p><b>NERVOUS SYSTEM</b></p> <ul style="list-style-type: none"> <li>• structure of neuron</li> <li>• transmission of impulse</li> <li>• synaptic transmission</li> <li>• disorders of neurons</li> <li>• central nervous system/brain</li> <li>• autonomic nervous system</li> <li>• peripheral nervous system</li> <li>• disorders of nervous system</li> </ul> <p><b>THE HEART</b></p> <ul style="list-style-type: none"> <li>• structure/blood flow</li> <li>• control of heart rate</li> <li>• heart disorders</li> <li>• arteries/veins/capillaries</li> <li>• circulatory routes</li> <li>• control of blood pressure</li> <li>• disorders of vascular system</li> </ul> <p><b>DIGESTIVE SYSTEM</b></p> <ul style="list-style-type: none"> <li>• Mouth               <ul style="list-style-type: none"> <li>○ esophagus/peristalsis</li> <li>○ disorders of upper GI tract</li> </ul> </li> <li>• Stomach               <ul style="list-style-type: none"> <li>○ gastric secretions</li> <li>○ chemical/mechanical digestion</li> <li>○ disorders of stomach</li> </ul> </li> <li>• Intestines               <ul style="list-style-type: none"> <li>○ small intestine/villi</li> <li>○ large intestine</li> <li>○ liver/gall bladder/pancreas</li> <li>○ absorption/defecation</li> <li>○ disorders of lower GI tract</li> </ul> </li> </ul> <p><b>RESPIRATORY SYSTEM</b></p> <ul style="list-style-type: none"> <li>• structures of respiratory tract</li> <li>• diaphragm/breathing mech.</li> <li>• control of breathing</li> <li>• disorders of respiratory tract</li> </ul>		

# CURRICULUM MAP

Subject: Current Topics in Biology

Grade Level: 12th

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
		<p><b>RIGHT TO DIE/ RIGHT TO REFUSE MEDICAL TREATMENT</b></p> <ul style="list-style-type: none"> <li>• Dr. Kevorkian</li> <li>• Euthanasia</li> </ul> <p><b>REPRODUCTIVITY</b></p> <ul style="list-style-type: none"> <li>• Egg/sperm donors</li> <li>• Frozen embryos</li> <li>• Cloning</li> <li>• Surrogacy</li> </ul> <p><b>AIDS</b></p> <ul style="list-style-type: none"> <li>• Causes</li> <li>• Prevention</li> <li>• Treatment</li> </ul> <p><b>SEX EDUCATION</b></p> <ul style="list-style-type: none"> <li>• School's role</li> <li>• TV effects</li> <li>• Abstinence</li> </ul>	<p><b>DRUGS</b></p> <ul style="list-style-type: none"> <li>• Trends</li> <li>• Legalization</li> <li>• HIV association</li> <li>• Alcohol</li> </ul> <p><b>TRANSPLANTS</b></p> <ul style="list-style-type: none"> <li>• Who? why? costs</li> <li>• Animal organs</li> <li>• Fetal tissues</li> </ul> <p><b>GENETIC REVOLUTION</b></p> <ul style="list-style-type: none"> <li>• DNA studies</li> <li>• Bio-engineered plants</li> <li>• Stem cell research</li> </ul>



# CURRICULUM MAP

Subject: Physics: The Physical Setting

Grade Level: 11<sup>th</sup> & 12<sup>th</sup>

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>UNIFORM MOTION (4,5,8,9)</b></p> <ul style="list-style-type: none"> <li>• Displacement</li> <li>• Velocity</li> <li>• Acceleration</li> <li>• Graphing &amp; graph</li> <li>• Motion equations</li> <li>• Centripetal accelerations</li> </ul> <p><b>FORCES(2,3,4,5,6,7,9)</b></p> <ul style="list-style-type: none"> <li>• Newton's 1<sup>st</sup> law</li> <li>• Newton's 2<sup>nd</sup> law</li> <li>• Frictional forces &amp; equations</li> <li>• Centripetal forces</li> <li>• Gravitational Focus                             <ul style="list-style-type: none"> <li>○ universal gravitation</li> <li>○ Kepler's laws</li> </ul> </li> </ul> <p><b>VECTORS (1,2,3,4,5,6,7,9)</b></p> <ul style="list-style-type: none"> <li>• Scalars &amp; vectors</li> <li>• Parallel vectors</li> <li>• Perpendicular vectors                             <ul style="list-style-type: none"> <li>○ parallelogram method</li> <li>○ head to tail method</li> <li>○ by components</li> </ul> </li> </ul>	<p><b>MOTION IN TWO DIMENTIONS (1,2,4,6,7,8,9)</b></p> <ul style="list-style-type: none"> <li>• Independent of perpendicular motions</li> <li>• Projectile motion</li> <li>• Circular motion</li> </ul> <p><b>MOMENTUM(1,2,4,6)</b></p> <ul style="list-style-type: none"> <li>• Impulses &amp; momentum equations</li> <li>• Newton's 3<sup>rd</sup> law</li> <li>• Conservation of momentum</li> <li>• Internal &amp; external forces</li> <li>• Conservation of momentum in 2 or 3 dimensions</li> </ul> <p><b>ENERGY(1,4,5,6)</b></p> <ul style="list-style-type: none"> <li>• Work</li> <li>• KE &amp; PE energy</li> <li>• Simple machines</li> <li>• Mechanical advantage</li> <li>• Conservation of energy</li> <li>• Conservation of energy in collisions</li> <li>• Power</li> <li>• Torques</li> <li>• Mass - energy conservation</li> </ul>	<p><b>WAVES (1,3,4,6)</b></p> <ul style="list-style-type: none"> <li>• Types of waves</li> <li>• Wave characteristic</li> <li>• Interference</li> <li>• Polarization</li> <li>• Diffraction</li> <li>• Resonance &amp; standing awaves</li> <li>• Doppler effect</li> </ul> <p><b>SOUND &amp; LIGHT (1,3,4,6)</b></p> <ul style="list-style-type: none"> <li>• Reflection</li> <li>• Refraction (Snell's law)</li> </ul> <p><b>ELECTRONIC FIELDS (1,4,5,6,9)</b></p> <ul style="list-style-type: none"> <li>• Static electricity &amp; charges</li> <li>• Electrostatic fields</li> <li>• Charging by conduction</li> <li>• Charging by induction</li> <li>• Potential differences</li> <li>• Charge distribution &amp; field strength                             <ul style="list-style-type: none"> <li>○ point charges</li> <li>○ wires &amp; rods</li> <li>○ parallel plates</li> </ul> </li> </ul>	<p><b>CURRENT ELECTRICITY (1,2,4,5,6,9)</b></p> <ul style="list-style-type: none"> <li>• Electric current</li> <li>• Resistance</li> <li>• Ohm's law</li> <li>• Electrical power</li> <li>• Series circuit</li> <li>• Parallel circuit</li> <li>• Series - parallel circuits</li> <li>• Resistivity</li> </ul> <p><b>MAGNETISM &amp; ELECTROMAGNET APPLICATIONS (1,2,4,5,6,9)</b></p> <ul style="list-style-type: none"> <li>• Magnetic domain &amp; field directions</li> <li>• Magnetic field distribution &amp; strength</li> <li>• Electromagnetic induction                             <ul style="list-style-type: none"> <li>○ right hand rule #1</li> <li>○ right hand rule #2</li> <li>○ right hand rule #3</li> </ul> </li> <li>• Motors</li> <li>• Generators</li> <li>• Transformers</li> </ul> <p><b>MODERN PHYSICS (1,4,5,6,7)</b></p> <ul style="list-style-type: none"> <li>• Photoelectric effect</li> <li>• Light wave particle</li> <li>• Emission spectrum</li> <li>• Debroglie wave lengths</li> <li>• Models of the atom                             <ul style="list-style-type: none"> <li>○ Rutherford model</li> <li>○ Bohr model</li> </ul> </li> <li>• The Standard Model</li> </ul>

# CURRICULUM MAP

Subject: Environmental Science

Grade Level: Mixed

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>ORGANIC GARDEN PROJECT</b></p> <ul style="list-style-type: none"> <li>• Experiential Learning</li> <li>• Cooperative Activities</li> <li>• Leadership Development</li> </ul> <p><b>FOOD PRODUCTION - FALL</b></p> <ul style="list-style-type: none"> <li>• Harvest of summer vegetables               <ul style="list-style-type: none"> <li>○ Use in school lunch program</li> <li>○ Use by local restaurants</li> <li>○ Tasted and tested by class members</li> </ul> </li> <li>• Direct seeding of varieties for fall harvest</li> <li>• Requirements for plant growth</li> </ul> <p><b>WINTER GARDEN PREPARATIONS</b></p> <ul style="list-style-type: none"> <li>• Composting plant matter</li> <li>• Addition of soil nutrients</li> <li>• Cover crops</li> </ul> <p><b>ORGANIC AGRICULTURE</b></p> <ul style="list-style-type: none"> <li>• Soil health</li> <li>• Locally grown</li> <li>• Nutrition</li> <li>• Economics</li> </ul> <p><b>CONVENTIONAL AGRICULTURE</b></p> <ul style="list-style-type: none"> <li>• Fossil Fuel inputs</li> <li>• Pesticides/Herbicides</li> <li>• Treatment of Animals</li> <li>• GMOs</li> <li>• Growth Hormones</li> </ul> <p><b>TREE IDENTIFICATION</b></p> <ul style="list-style-type: none"> <li>• Species common to NE</li> </ul> <p>Leaf collection</p>	<p><b>SPRING GARDEN PREPARATIONS</b></p> <ul style="list-style-type: none"> <li>• <i>Plant Requirements</i> <ul style="list-style-type: none"> <li>○ Soil</li> <li>○ Oxygen</li> <li>○ Water</li> <li>○ Organic Matter</li> </ul> </li> <li>• Desirable vegetable varieties               <ul style="list-style-type: none"> <li>○ Student surveys</li> </ul> </li> <li>• Planning the garden               <ul style="list-style-type: none"> <li>○ Soil requirements</li> <li>○ Growth rates</li> <li>○ Mathematics</li> </ul> </li> <li>• Mentoring Program</li> </ul> <p><b>GLOBAL WARMING</b></p> <ul style="list-style-type: none"> <li>○ Human population</li> <li>○ Fossil fuels</li> <li>○ Ecological Footprint</li> <li>○ Act Locally</li> </ul> <p><b>HUDSON RIVER</b></p> <ul style="list-style-type: none"> <li>○ Nuclear Energy</li> <li>○ Hudson River School of Painters</li> <li>○ Mercury Contamination</li> <li>○ Hydroelectric Power</li> <li>○ Responsible Development</li> <li>○ PCBs</li> </ul> <p><b>CURRENT GLOBAL ENVIRONMENTAL ISSUES</b></p>	<p><b>HUDSON RIVER</b></p> <ul style="list-style-type: none"> <li>○ Nuclear Energy</li> <li>○ Hudson River School of Painters</li> <li>○ Mercury Contamination</li> <li>○ Hydroelectric Power</li> <li>○ Responsible Development</li> <li>○ PCBs</li> </ul> <p><b>GLOBAL WARMING</b></p> <ul style="list-style-type: none"> <li>○ Human population</li> <li>○ Fossil fuels</li> <li>○ Ecological Footprint</li> <li>○ Act Locally</li> </ul> <p><b>SPRING GARDEN PREPARATIONS</b></p> <ul style="list-style-type: none"> <li>• <i>Plant Requirements</i> <ul style="list-style-type: none"> <li>○ Soil</li> <li>○ Oxygen</li> <li>○ Water</li> <li>○ Organic Matter</li> </ul> </li> <li>• Desirable vegetable varieties               <ul style="list-style-type: none"> <li>○ Student surveys</li> </ul> </li> <li>• Planning the garden               <ul style="list-style-type: none"> <li>○ Soil requirements</li> <li>○ Growth rates</li> <li>○ Mathematics</li> </ul> </li> <li>• Mentoring Program</li> </ul> <p><b>ORGANIC AGRICULTURE</b></p> <ul style="list-style-type: none"> <li>• Soil health</li> <li>• Locally grown</li> <li>• Nutrition</li> <li>• Economics</li> </ul>	<p><b>CONVENTIONAL AGRICULTURE</b></p> <ul style="list-style-type: none"> <li>• Fossil Fuel inputs</li> <li>• Pesticides/Herbicides</li> <li>• Treatment of Animals</li> <li>• GMOs</li> <li>• Growth Hormones</li> </ul> <p><b>TREE IDENTIFICATION</b></p> <ul style="list-style-type: none"> <li>• Species common to NE</li> <li>• Leaf collection</li> </ul> <p><b>ORGANIC GARDEN PROJECT</b></p> <ul style="list-style-type: none"> <li>• Experiential Learning</li> <li>• Cooperative Activities</li> <li>• Leadership Development</li> </ul> <p><b>GARDEN PREPARATIONS</b></p> <ul style="list-style-type: none"> <li>• Composting</li> <li>• Soil nutrients</li> </ul> <p><b>FOOD PRODUCTION - SPRING</b></p> <ul style="list-style-type: none"> <li>• Planting of spring and summer vegetables               <ul style="list-style-type: none"> <li>○ Use in school lunch program</li> <li>○ Use by local restaurants</li> <li>○ Tasted and tested by class members</li> </ul> </li> <li>• Direct seeding of varieties for spring harvest</li> <li>• Seed starter production in classroom for early summer transplant</li> <li>• Requirements for plant growth</li> <li>• Mentoring Program</li> </ul> <p><b>CURRENT GLOBAL ENVIRONMENTAL ISSUES</b></p>

# CURRICULUM MAP

**Subject: Nutrition**

**Grade Level: 10<sup>th</sup>, 11<sup>th</sup> & 12<sup>th</sup>**

**rev 11/07**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>WELLNESS: FOOD CHOICES</b></p> <ul style="list-style-type: none"> <li>• Decision making</li> <li>• Actions, choices</li> <li>• Food, nutrition &amp; health</li> <li>• Hunger vs. appetite</li> </ul> <p><b>FOOD PYRAMID</b></p> <ul style="list-style-type: none"> <li>• Using food pyramid</li> </ul> <p><b>NUTRIENTS &amp; ENERGY</b></p> <ul style="list-style-type: none"> <li>• Metabolism</li> <li>• Energy use</li> </ul> <p><b>CARBOHYDRATES</b></p> <ul style="list-style-type: none"> <li>• Types of starch foods: advantages/disadvantages</li> <li>• Comp. of wheat, grain, potatoes (including breads, cereals &amp; other grains)</li> <li>• Types of sugars, alternative sweeteners</li> </ul> <p><b>PROTEINS</b></p> <ul style="list-style-type: none"> <li>• Types of proteins</li> <li>• Protein sources</li> <li>• How used in body</li> </ul> <p><b>FATS</b></p> <ul style="list-style-type: none"> <li>• Types of fats</li> <li>• Dangers of high fat/cholesterol diets</li> <li>• How to avoid fats</li> </ul>	<p><b>DIGESTION</b></p> <ul style="list-style-type: none"> <li>• How body uses major nutrients</li> <li>• Process of digestion</li> </ul> <p><b>DISEASE RELATED TO NUTRITION</b></p> <ul style="list-style-type: none"> <li>• Projects*</li> <li>• Presentation on diseases related to nutritional problems</li> </ul> <p><b>CULTURES &amp; FOOD CHOICES</b></p> <ul style="list-style-type: none"> <li>• Projects*</li> <li>• How different cultures view food</li> <li>• Staples of cultures</li> <li>• compare cultures</li> <li>• (presentations)</li> </ul> <p><b>VIDEO</b></p> <ul style="list-style-type: none"> <li>• Project – food safety</li> </ul>		

# CURRICULUM MAP

Subject: AP Chemistry

Grade Level: 11<sup>th</sup> & 12<sup>th</sup>

rev 11/07

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p><b>Unit 1 – Matter &amp; Atomic Structure</b></p> <ul style="list-style-type: none"> <li>• Significant figures, units</li> <li>• Types of matter</li> <li>• Atomic theory</li> </ul> <p><b>Unit 2-Stoichiometry</b></p> <ul style="list-style-type: none"> <li>• Formulas and naming</li> <li>• The mole</li> <li>• Mass relations in reactions</li> </ul> <p><b>Unit 3 – Chemical Reactions</b></p> <ul style="list-style-type: none"> <li>• Types of reactions</li> <li>• Molarity</li> <li>• Solutions</li> <li>• Precipitation reactions</li> <li>• Acid base reactions</li> <li>• Redox reactions</li> </ul> <p><b>Unit 4 -Gases</b></p> <ul style="list-style-type: none"> <li>• Gaseous state</li> <li>• Ideal gas law</li> <li>• Stoichiometry of reactions</li> <li>• Partial pressure</li> <li>• Mole fraction</li> <li>• Kinetic molecular theory</li> <li>• Real gases</li> </ul> <p><b>Unit 5 - Thermochemistry</b></p> <ul style="list-style-type: none"> <li>• Calorimetry</li> <li>• Enthalpy</li> <li>• Thermochemical equations</li> </ul>	<p><b>Unit 6- Electronic Structure &amp; Periodic Table</b></p> <ul style="list-style-type: none"> <li>• Wave nature of light</li> <li>• Quantum Numbers</li> <li>• Historical aspects</li> <li>• Periodic trends</li> </ul> <p><b>Unit 7- Bonding &amp; Molecular Geometry</b></p> <ul style="list-style-type: none"> <li>• Bond energy</li> <li>• Intermolecular forces</li> <li>• Electron Dot Diagrams</li> <li>• VSEPR</li> </ul> <p><b>Unit 8- Liquids &amp; Solids</b></p> <ul style="list-style-type: none"> <li>• Vapor Pressure</li> <li>• Phase Diagrams</li> <li>• Types of solids</li> </ul> <p><b>Unit 9 - Solutions</b></p> <ul style="list-style-type: none"> <li>• Concentration systems</li> <li>• Solution stoichiometry</li> <li>• Principles of solubility</li> <li>• Colligative properties</li> </ul> <p><b>Unit 10- Chemical Thermodynamics</b></p> <ul style="list-style-type: none"> <li>• Entropy and enthalpy</li> <li>• Free energy equation</li> <li>• State Functions</li> </ul>	<p><b>Unit 11 – Kinetics</b></p> <ul style="list-style-type: none"> <li>• Rate vs. concentration</li> <li>• Concentration vs. time</li> <li>• Activation energy</li> <li>• Rate vs. temperature</li> <li>• Reaction mechanism</li> <li>• Catalysts</li> </ul> <p><b>Unit 12 –Equilibrium</b></p> <ul style="list-style-type: none"> <li>• Equilibrium system</li> <li>• Equilibrium constant</li> <li>• Applications of <math>K_{eq}</math></li> <li>• LeChatelier and stresses</li> </ul> <p><b>Unit 13- Acid-Base Theory</b></p> <ul style="list-style-type: none"> <li>• <math>K_a</math> and <math>K_b</math></li> <li>• Buffers</li> <li>• Indicators</li> <li>• Titrations</li> </ul> <p><b>Unit 14 – Solubility Equilibrium</b></p> <ul style="list-style-type: none"> <li>• <math>K_{sp}</math></li> <li>• Common ion</li> <li>• Precipitation</li> </ul> <p><b>Unit 15-Electrochemistry</b></p> <ul style="list-style-type: none"> <li>• Redox equations</li> <li>• Electrochemical cells</li> <li>• Electrolysis</li> <li>• Nernst equation</li> </ul>	<p><b>Unit 16-Nuclear Chemistry</b></p> <ul style="list-style-type: none"> <li>• Nuclear equations</li> <li>• Half-lives</li> <li>• Nuclear particle emissions</li> <li>• Fission &amp; Fusion</li> </ul> <p><b>REVIEW FOR AP EXAM</b> Emphasize on:</p> <ul style="list-style-type: none"> <li>• Balanced net ionic eqns</li> <li>• Complex ions</li> <li>• Solubility rules</li> <li>• Organic nomenclature</li> </ul>

# CURRICULUM MAP

**Subject: Astronomy**

**Grade Level: 11<sup>th</sup> & 12<sup>th</sup>**

**rev 11/07**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p>I. Introduction to Astronomy Introduction to Our Solar System Planetary Geology Why only 8 planets?</p> <p>II. Origins of Astronomy Constellations (Mythology) Introduction to research and presentation methods Using Stars/Constellations as Reference Points</p> <p>III. Historical Astronomy Introduction to possible power point devices Historical Astronomers</p> <p>IV. [Cosmic Voyage]</p>	<p>V. Space Science Human Exploration Modern Exploration Benefits of space science Deep Space Astronomy Extraterrestrial Life Self-Guided Research</p> <p>VI. Telescopes</p>		<p style="text-align: center;">•</p>

# CURRICULUM MAP

**Subject: AP Physics**

**Grade Level: 12th**

**rev 11/07**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<p>1. Newtonian Mechanics</p> <p>A. 1 dimensional motion: distance, velocity &amp; acceleration</p> <p>i. Equations of motion</p> <p>ii.Graphing 1 dim. Motion: d-t, v-t, a-t</p> <p>iii.Freely falling objects</p> <p>B. Forces</p> <p>i.Newtons Laws</p> <p>ii.Gravitational forces</p> <p>iii.Frictional forces</p> <p>iv.Spring tension/compression</p> <p>v.Centripetal acceleration and force</p> <p>C. Vectors</p> <p>i.Scalers vs. Vectors</p> <p>ii.Vector components</p> <p>iii.Types of vectors</p> <p>D. 2 dimensional motion</p> <p>i.Independence of vertical and horizontal motion</p> <p>ii.Projectile motion</p> <p>E. Gravity</p> <p>i.Newton's universal law of gravitation\</p> <p>ii.Gravitational attraction of spherical bodies</p> <p>iii.Kepler's laws of planetary motion</p> <p>iv.Simple harmonic motion</p> <p>F. Momentum</p> <p>i.Linear momentum</p> <p>ii.Impulse</p> <p>iii.Conservation of momentum</p> <p>iv.Elastic and inelastic collisions</p> <p>G. Mechanical Energy</p> <p>i.Potential energy</p> <p>ii.Kinetic energy</p> <p>iii.Work and power</p> <p>iv.Energy conversions</p> <p>v.Conservation of energy</p> <p>H. Rotational motion</p> <p>i.Angular position, velocity and acceleration</p> <p>ii.Similarities between rotational and linear systems</p> <p>iii.Moment of inertia</p> <p>iv.Torques and rotational equilibrium</p> <p>v.Angular momentum and its conservation</p> <p>vi.Rolling motion</p>	<p>2. Fluid Mechanics and Thermal Physics</p> <p>A. Fluid Mechanics</p> <p>i.Density</p> <p>ii.Hydrostatic pressure</p> <p>iii.Archimedes Principle and applications</p> <p>iv.Fluid flow and continuity</p> <p>v.Bernoulli's equation</p> <p>B. Temperature and heat</p> <p>i.Temperature scales</p> <p>ii.Zeroth law of thermodynamics (thermo equilibrium)</p> <p>iii.Thermal expansion</p> <p>iv.Heat and mechanical work</p> <p>v.Specific heat</p> <p>vi.Latent heats and temperature curves</p> <p>vii.Ideal gases</p> <p>C. Thermodynamics</p> <p>i.First law (heat, work &amp; internal energy)</p> <p>ii.Thermal processes &amp; Pressure- volume graphs</p> <p>iii.Process functions and State functions</p> <p>iv.Second law (arrow of time)</p> <p>v.Heat engines and the Carnot cycle</p> <p>vi.Heat pumps, refrigerators and air conditioners</p> <p>vii.Entropy</p> <p>viii.Third law</p> <p>3. Electricity and Magnetism</p> <p>A. Electric fields and electric potential</p> <p>i.Point charges and spheres</p> <p>ii.Line charges and cylinders</p> <p>iii.Near planes</p> <p>iv.Parallel plates</p> <p>B. Coulombs law</p> <p>C. Transfer of charge</p> <p>i.Conduction</p> <p>ii.Induction</p> <p>iii.Electrostatics in conductors</p> <p>D. Electric circuits</p> <p>i.Ohm's law</p> <p>ii.Resistors in series</p> <p>iii.Resistors in parallel</p> <p>iv.Power in a circuit</p> <p>v.Energy consumption in a circuit</p> <p>E. Capacitors</p> <p>i.Capacitance</p> <p>ii.Dielectrics</p> <p>iii.Capacitors in parallel</p> <p>iv.Capacitors in series</p> <p>F. Magnetic fields</p>	<p>4. Waves and Optics</p> <p>A. Wave properties</p> <p>i.Velocity, wavelength, frequency and period</p> <p>ii.Amplitude and energy</p> <p>iii.Standing waves</p> <p>iv.Reflection</p> <p>v.Superposition</p> <p>B. Longitudinal waves</p> <p>i.Sound waves</p> <p>ii.Other compressional waves</p> <p>C. Transverse waves</p> <p>D. Electromagnetic waves</p> <p>i.Electromagnetic spectrum</p> <p>ii.Dispersion</p> <p>iii.Polarization</p> <p>E. Refraction</p> <p>i.Index of refraction</p> <p>ii.Snell's law</p> <p>iii.Critical angle</p> <p>F. Diffraction and interference</p> <p>i.Single slit diffraction and resolution</p> <p>ii.Double slit interference</p> <p>iii.Diffraction grating</p> <p>G. Geometric optics</p> <p>i.Ray tracing:</p> <p>ii.Focal lengths and image distances</p> <p>iii.Magnification</p> <p>iv.Spherical and Chromatic aberrations</p> <p>5. Atomic and Nuclear Physics</p> <p>A. Photoelectric effect</p> <p>i.Threshold frequency</p> <p>ii.Work function</p> <p>iii.Energy of incident photons</p> <p>iv.Energy of photoemissive electrons</p> <p>v.Planck's constant</p> <p>B. Atomic physics and quantum effects</p> <p>i.Atomic spectra and energy levels</p> <p>ii.Bohr model of the atom</p> <p>iii.Energy of emitted photons</p> <p>C. Wave- Particle duality</p> <p>i.DeBroglie wavelengths</p> <p>ii.Momentum of a photon</p> <p>iii.Compton effect</p> <p>D. Nuclear physics</p> <p>i.Radioactive decay</p> <p>ii.Conservation of charge and mass number</p>	<p>6. Review for AP Physics B exam</p>

	<ul style="list-style-type: none"><li>i.Fields around permanent magnets</li><li>ii.Fields around current carrying wires</li><li>iii.Fields around solenoids</li><li>iv.Interaction of current carrying wire and external field</li><li>v.Moving charges in magnetic fields</li></ul> <p>G. Electromagnetism</p> <ul style="list-style-type: none"><li>i.Electromagnetic induction</li><li>ii.Faraday's law</li><li>iii.Motors</li><li>iv.Generators</li><li>v.Lenz's law</li></ul>		
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# CURRICULUM MAP

**Subject: Forensics**

**Grade Level: 11<sup>th</sup> & 12<sup>th</sup>**

**rev 11/07**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<ul style="list-style-type: none"> <li>• Define forensic science or criminalistics</li> <li>• Describe the services of a typical comprehensive crime laboratory</li> <li>• Define physical evidence</li> <li>• Review the proper collection and packaging of common types of physical evidence</li> <li>• Define chain of custody</li> <li>• Explain the difference between the identification and comparison of physical evidence.</li>   <li>• Define individual and class characteristics.</li> <li>• Define physical and chemical properties</li> <li>• List and define the metric system's basic units and prefixes</li> <li>• Define elements and compounds</li> <li>• Define phase</li> <li>• Describe the electromagnetic spectrum</li> <li>• Distinguish between the Celsius and Fahrenheit</li> <li>• Distinguish mass from weight</li> <li>• Define density</li> <li>• Define psychological and physical dependence</li> <li>• Describe the schedules of the Controlled Substances Act</li> <li>• Describe the process of chromatography</li> <li>• Explain the difference between thin-layer and gas chromatography Name the parts of a simple absorption spectrophotometer</li> <li>• Explain how alcohol is absorbed into the bloodstream, transported throughout the body, and finally eliminated by oxidation and excretion.</li>   <li>• Describe the design of the Breathalyzer</li> <li>• Explain the significance of a chemical equation</li> <li>• Define acid and base</li> <li>• List the parts of the compound microscope</li> <li>• List the A-B-O antigens and antibodies found in the blood for each of the four blood types: A, B, AB, and O.</li>   <li>• Explain why agglutination occurs</li> <li>• Explain how whole blood is typed</li> <li>• Describe tests used to characterize a stain as blood</li> <li>• Define chromosome and gene</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the three phases of hair growth</li> <li>• List hair features that are useful for the microscopic comparison of human hairs.</li>   <li>• Classify fibers.</li> <li>• Describe the structure of a polymer.</li>   <li>• Define protons, neutrons, and electrons, including their mass and charge relationships.</li> <li>• Define atomic number and atomic mass number.</li> <li>• Explain the phenomenon of an atom releasing energy in the form of light</li> <li>• Define an isotope</li> <li>• Define radioactivity.</li>   <li>• Describe the components of paint</li> <li>• Define oxidation</li> <li>• Describe the role of heat energy in chemical reactions</li> <li>• Describe the difference between an exothermic and endothermic chemical reaction.</li>   <li>• Define ridge characteristics</li> <li>• Explain why a fingerprint is a permanent feature of the human anatomy.</li>   <li>• List the three major fingerprint patterns and their respective subclasses.</li>   <li>• Explain what is meant by visible, plastic, and latent fingerprints.</li>   <li>• List the class and individual characteristics of bullets and cartridge cases.</li>   <li>• List some common individual characteristics associated with handwriting.</li> <li>• List some of the techniques utilized by document examiners for uncovering alterations, erasures, obliterations, and variations in pen inks.</li>   <li>• Introduce search engines along with the mechanisms used to search for information</li> </ul>		



<ul style="list-style-type: none"><li>• List the laboratory tests necessary to characterize seminal stains.</li><li>• Describe the concept of base pairing as it relates to the double helix structure of DNA.</li><li>• Explain how the sequence of bases along a DNA strand ultimately determines the structure of proteins that are synthesized within the body.</li><li>• Describe how a double-strand DNA replicates itself. What are the implications of this process for forensic science?</li><li>• Understand how DNA can be cut and spliced into a foreign DNA strand.</li><li>• Explain the difference between DNA strands which code for the production of proteins and those strands which contain repeating sequences of bases.</li><li>• Explain what is meant by a restriction fragment length polymorphism (RFLP).</li><li>• Describe the process of typing DNA by the RFLP technique and explain how DNA band patterns are interpreted.</li><li>• Explain the technology of polymerase chain reaction (PCR) and how it is applied to forensic science.</li><li>• Explain the difference between nuclear DNA and mitochondrial DNA</li></ul>	<p>on the Internet.</p> <ul style="list-style-type: none"><li>• Describe other types of information retrieval, such as mailing lists and news groups, available through the Internet.</li></ul>		
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# Curriculum Map

Subject: Physics Elective 1

Grade Level:

rev 7/15

First Quarter	Second Quarter	Third Quarter	Fourth Quarter
<p><b>Unit 1: Driving The Roads</b></p> <ul style="list-style-type: none"><li>• Distance</li><li>• Speed</li><li>• Acceleration</li><li>• Graphing Motion</li><li>• Using Models</li></ul> <p><b>Unit 2: Physics in Action</b></p> <ul style="list-style-type: none"><li>• Newton's First Law</li><li>• Newton's Second Law</li><li>• Projectile Motion</li><li>• Newton's Third Law</li><li>• Frictional force</li></ul>	<p><b>Unit 3: Safety</b></p> <ul style="list-style-type: none"><li>• Physics of accidents</li><li>• Newton's Laws revisited</li><li>• Energy and work</li><li>• Momentum</li><li>• Impulse</li></ul> <p><b>Unit 4: Thrills and Chills</b></p> <ul style="list-style-type: none"><li>• Velocity and Acceleration</li><li>• Gravitational potential energy</li><li>• Elastic Potential energy</li><li>• Universal Gravitation</li><li>• Hook's Law</li><li>• Apparent weight</li><li>• Circular Motion</li><li>• Work and Power</li><li>• Force and Energy</li></ul>		

# Curriculum Map

Subject: Physics Elective 2

Grade Level: 10-12

rev 7/15

First Quarter	Second Quarter	Third Quarter	Fourth Quarter
		<p><b>Unit 1: Let Us Entertain You</b></p> <ul style="list-style-type: none"><li>• Sounds in vibrating string</li><li>• Waves</li><li>• Sounds in vibrating air</li><li>• Shadows</li><li>• Reflected light</li><li>• Curved Mirrors</li><li>• Refraction of light</li><li>• Lenses</li><li>• Color</li></ul> <p><b>Unit 2: Atoms on Display</b></p> <ul style="list-style-type: none"><li>• Static electricity</li><li>• Nature of charge</li><li>• Nucleus</li><li>• Bohr Model</li><li>• Wave particle Duality</li><li>• Strong Force</li><li>• Radioactive Decay</li><li>• Energy in Nucleus</li><li>• Fission and Fusion</li></ul>	<p><b>Unit 3: Electricity for Everyone</b></p> <ul style="list-style-type: none"><li>• Generating electricity</li><li>• Series and parallel circuits</li><li>• Ohm's Law</li><li>• Electric power</li><li>• Current and Voltage</li><li>• Resistance</li><li>• Thermodynamics</li><li>• Energy Consumption</li></ul> <p><b>Unit 4: Toys for Understanding</b></p> <ul style="list-style-type: none"><li>• Electricity and magnetism connection</li><li>• Electromagnets</li><li>• Building an electric motor</li><li>• Detect and induce current</li><li>• AC and DC current</li><li>• Electromagnetic Spectrum</li></ul>

# Introduction to Geology

## Curriculum Map

### Rocks and Minerals

- Minerals
  - Identification & Classification
  - Arrangements & Bonding
- Igneous Rocks
  - Origin
  - Texture and Composition
  - Intrusive and Extrusive
- Sedimentary Rocks
  - Origin
  - Types - clastic and chemical
  - Organic
- Metamorphic
  - Origin
  - Characteristics & types

### Dynamic Crust

- Earthquakes
  - Zones of activity
  - P & S waves
  - Epicenters
- Earth's Interior
  - Density & temperature with depth
  - Seismic & meteorite evidence
- Plate Movements
  - Rock & Fossil Correlations
  - Heat Flow
  - Hot spots
  - Rifting, subdivision, faults
- Properties of Crust
  - Ocean bottom - basaltic
  - Continent - granite

## Earth History

- Geological Sequence
  - Igneous - intrusions/extrusions
  - Faults & folds are younger
- Correlation
  - Walking the outcrop
  - Index fossils
  - Volcanic ash
- Geologic History
  - Time scale
  - Buried erosional surface
- Absolute ages
  - Radioactive dating
- Evolution

## Surface Processes

- Weathering
  - Physical and chemical
  - Particles and surface area
  - Mineral composition
- Weathering Products
  - Soil
  - Human influences
- Erosion
  - Residual vs transported
  - Agents
  - Particles vs stream velocity
- Deposition - size, shape, density
- Land forms - climate, rocks and structures.