High School GPS Physical Science - Cobb County Schools

Problem Based Learning Pacing Guide, 2017-2018

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit 1: Lab Safety and Molecular Motion** | **Unit2 : Heat, Temperature, & Phases of Matter** | **Unit 3: Atomic Structure & The Periodic Table;** **Radioactivity** | **Unit 4: Bonding, Nomenclature,** **Chemical Rxns, Acids & Bases** |
| **Focus:***Lab Safety**Measurement***Focus:***Molecular Motion (****SPS5a****)** *Particle arrangement and motion in solids, liquids, gases, and plasmas*
 |  **Focus:** *Heat* -*definition* ***(SPS7a)**** + *Specific heat* ***(SPS7c)***

*Heat transfer* ***(SPS 7b)**** + *Conduction*
	+ *Convection*
	+ *Radiation*

Conductors and Insulators ***(SPS7c)****Phase changes****(SPS 7d)**** *Flow of energy during phase changes*
* *Analyze heating/cooling curves*

*Gas Laws* ***(SPS5a&b)**** *Relationship between temperature, pressure, and volume of gases to molecular motion & behavior of gases*
	+ *Boyles Law*
	+ *Charles Law*
 | **Focus:** *Atomic Structure* ***(SPS 1a)*** * *Atoms, ions, isotopes*
* *Atomic number, atomic mass, location and charge of subatomic particles*

*Periodic Table* ***(SPS1b)*** * *Common names and symbols (first 20)*
* *# of Valence electrons*
* *Locations of metals, non-metals, metalloids*
* *Types of ions formed by main group elements*
* *Phases at room temp.*

*Predict properties based on location on periodic table* ***(SPS1c)*****Focus:** Radioactivity **(SPS4)** * *Nucleus*
	+ *Fusion vs. Fission(****SPS4a)***
	+ *Half-life math* ***(SPS4b)***
* *Practical application of nuclear energy and related problems* ***(SPS4c)***
 | **Focus***:**Covalent and Ionic**compounds* ***(SPS2a)**** + *Properties of…*
		- *Types of bonds*
		- *Elemental composition*
		- *Melting point*
		- *Boiling point*
		- *conductivity*

*Electron movement→bonding* ***(SPS2b)**** + *Predict formulas for stable binary ionic compounds*

*Use IUPAC nomenclature for* ***(SPS2c)**** + *Binary ionic*
	+ *Binary covalent*

**Focus:** *Chemical reactions and conservation of mass* ***(SPS3a)**** + *Synthesis*
	+ *Decomposition*
	+ *Single replacement*
	+ *Double replacement*

*Illustrate Conservation of Matter**through**Balancing equations* ***(SPS3b)*****Focus:** *Solutions* ***(SPS 6a, b, c)**** + *Properties: (Solute, Solvent, Conductivity, Concentration)*
	+ *Factors affecting rate of dissolution in different solvents*
	+ *Read solubility curve to interpret effects of temperature on solubility*

**Focus***:**Acids and Bases****(SPS 6d&e)**** + *pH scale/properties*
	+ *classify household chemicals*
 |
| **SPS 5**  | **SPS 5, 7** | **SPS 1, 4** | **SPS 2**, **3, 6** |
| ~2 Weeks | ~2 Weeks | ~4 Weeks | ~6 Weeks |

High School GPS Physical Science

Cobb County Schools Pacing Guide, 2017-2018

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Unit 5: Force and Motion,** **Transformation of Energy** | **Unit 6: Work & Simple Machines** | **Unit 7: Waves,** **Transformation of Energy** | **Unit 8: Electricity and****Magnetism** | **EOC Review/ End of Year****Project**  |
| **Focus:*** **Focus:**

*Energy* ***(SPS7a)**** + *KE, PE, and Transformation/ Conservation*

**Focus:** *Analyze the motion of objects* ***(SPS8a)****-Speed & Velocity* * + *Acceleration*
	+ *Graphing velocity & acceleration*

*Force* ***(SPS 8)**** + *Support Newton’s Three Laws with experimental evidence (relationships among force, mass, velocity, and acceleration)*

*Falling Objects* ***(SPS 8c)**** Relationship between mass and gravitational force
 | **Focus:***Work* ***(SPS 8e)**** + *Simple machines*
	+ *Mechanical advantage*
	+ *Calculate*
		- *Mechanical advantage*
		- *Work*
 | **Focus:***Transfer of energy* ***(SPS7a)**** + *Chemical, mechanical, electromagnetic, light, sound, thermal, electrical, nuclear)*

**Focus:** *Waves Types & Characteristics* ***(SPS 9b)**** + *Mechanical*
		- *Relationship of wavelength, frequency, energy*
	+ *Electromagnetic*
		- *Relationship of amplitude and energy*
	+ *Longitudinal*
	+ *Transverse*

*Wave interactions* ***(SPS 9c)**** + *Reflection*
	+ *Refraction*
	+ *Interference*

*-Diffraction**Effect of different media on wave speed of sound vs light waves* ***(SPS9d)****Doppler effect* ***(SPS 9e)*** | **Focus:***Electron flow* ***(SPS10b)**** + *AC vs. DC*
	+ *Circuits*
		- *Simple*
		- *Parallel*

*Relationship among voltage, current, and resistance* ***(SPS10a)****Relationship between magnetism and electricity* ***(SPS10c)****-Electromagnets**-Simple motors* *-Generators*  | * Create own PBL
* Genius Hour
* Bottles Rockets
 |
| **SPS 7, 8** | **SPS 8** | **SPS 7, 9** | **SPS 10** | **All** |
| ~5 Weeks | ~3 Weeks | ~5 Weeks | ~ 2 Weeks  | ~3 Weeks |