**Unit 1 Study Guide**

Chemistry Fundamentals

* + Quantitative vs. Qualitative
	+ Significant Figures
	+ Accuracy vs. Precision
	+ Rounding
	+ Dimensional Analysis
	+ Metric Conversions
	+ Temperature Conversions
	+ Scientific Notation

Stoichiometry

* Balancing Equations
* Percent Composition
* Empirical Formula
* Molar Mass
* Combustion

Matter

* + - Physical Properties and Changes
		- Chemical Properties and Changes
		- Particle View – states of matter
		- Density
		- Elements vs. Compounds
		- Pure Substances vs. Mixtures
		- Law of Conservation of Mass
		- Law of Definite Proportions
		- Isotopes

Separation Techniques

* + Chromatography
	+ Distillation
	+ Filtration
	+ Decanting
	+ Evaporation

Models, Quantum Theory and Modern Atomic Theory

* + Electromagnetic Spectrum
	+ Wavelength
	+ Photon (quantum)
	+ Frequency
	+ Diffraction
	+ Photoelectric Effect
	+ Orbitals – s, p, d, f
	+ Scientists
		- Ernest Rutherford
		- Niels Bohr
		- J. J. Thomson
		- John Dalton
		- Albert Einstein
	+ Techniques
		- PES
		- Mass Spectrometry
		- Spectrophotometry
		- Emission Spectroscopy
		- Flame Tests – Li, Na, K, Sr, Ba, Cu
	+ Models
		- Plum pudding
		- Quantum Mechanical

Periodic Table

* + Scientists
		- Dmitri Mendeleev
		- Henry Moseley
	+ Arrangement
		- Periods
		- Groups / families
		- Metals / non-metals / metalloids
		- Atomic Mass
		- Atomic Number (Z)
	+ Electron Configurations, Orbital Notation, Noble Gas Notation
	+ Periodic Law
	+ Coulomb’s Law
	+ Shielding
	+ Effective Nuclear Charge (Zeff)
	+ Aufbau Principle
	+ Hund’s Rule
	+ Pauli Exclusion Principle
	+ Paramagnetic vs. diamagnetic
	+ Trends and Periodicity
		- Electronegativity
		- Electron Affinity
		- Ionic Radius
		- Atomic Radius
		- Ionization Energy
		- Metallic Character