**Chemistry Study Guide**

**Chapter 4: The Structure of the Atom**

* **4.1: Early Theories of Matter**
	+ **Vocabulary**
		- Atom
	+ **Objectives**
		- Become an expert on and create a product to teach younger students about one aspect of atomic theory and associated experimentation.
		- Make connections between different ideas within the development of atomic theory and the atomic model.
		- Summarize key discoveries and people related to the development of atomic theory and our understanding of the atom.
		- Explain the relationship between unstable nuclei and radioactive decay.
		- Characterize alpha, beta, and gamma radiation in terms of mass and charge.
		- Write equations for nuclear decay.
		- Graph changes in mass and atomic number for decay events.
* **4.2: Subatomic Particles and the Nuclear Atom**
	+ **Vocabulary**
		- Electron
		- Nucleus
		- Proton
		- Neutron
	+ **Objectives**
		- Define atom in your own words.
		- Describe the structure of a typical atom. Be sure to identify where each subatomic particle is located.
		- Make a table comparing the relative charge and mass of each subatomic particle.
* **4.3: How Atoms Differ**
	+ **Vocabulary**
		- Atomic number
		- Isotope
		- Mass number
		- Atomic mass unit (amu)
		- Atomic mass
	+ **Objectives**
		- Identify the atomic number (number of protons) as determining the identity of an atom.
		- Define an isotope and explain why atomic masses are not whole numbers.
		- Calculate the number of protons, electrons, and neutrons in an atom given its atomic number and mass number.
		- Calculate mass number given number of protons and neutrons.
* **4.4: Unstable Nuclei and Radioactive Decay**
	+ **Vocabulary**
		- Nuclear reaction
		- Radioactivity
		- Radioactive decay
			* Alpha particle
			* Beta particle
			* Gamma ray
	+ **Objectives**
		- Explain the relationship between unstable nuclei and radioactive decay.
		- Characterize alpha, beta, and gamma radiation in terms of mass and charge.
		- Write equations for nuclear decay.
		- Graph changes in mass and atomic number for decay events.