 Chemistry Syllabus 2015-2016

Mr. Shull

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| Chapter | Content | Time | ***Possible*** Labs |
| 1. Introduction to Chemistry | What is Chemistry, Observations, Lab Safety, scientific method | 1 week | Observation and Inference (CSI Inquiry) |
| 2. Matter and Change | Classification of Matter, properties, intro to periodic table and elements. States of matter, chemical and physical changes, symbols, chemical formulas, conservation of mass | 2 weeks | Observing chemical reactions  Physical or chemical change  Chromatography |
| 3. Measurement | Scientific notation, accuracy, precision, significant figures, unit conversions, dimensional analysis | 1-2 Weeks | Density |
| 4. Atomic Structure | History of the Atom, structure of atoms, subatomic particles, elements, isotopes, atomic mass | 1-2 weeks | TBD |
| 5. Electrons in Atoms | Energy levels, electron arrangement, electron configurations, emission spectra. Lewis dot diagrams | 2 Weeks | Flame test |
| 6. The periodic table | Mendeleev, organization history, groups, families, periodic trends | 2 weeks | Creating periodic table  Element research |
| 7. Ionic and Metallic Bonding | Valence electrons, anion, cation, properties of ionic compounds, alloys | 1-2 Weeks | Bronze Penny |
| 8. Covalent Bonding | Molecular compounds, formulas, octet rule, VSPER Theory, intermolecular forces, covalent compounds, hydrogen bonding. | 1-2 weeks | TBD |
| 9. Chemical Names and Formulas | Ion charge, polyatomic ions, naming and writing formulas, Law of definite proportions, Law of Multiple Proportions. | 1-2 Weeks | Ionic Compounds |
| 10. Chemical Quantities | The Mole! Conversions with atoms, molecules, mole-mass, mole-volume. STP, empirical formulas. | 2-3 Weeks | Speed and Velocity  Acceleration |
| 11. Chemical Reactions | Types of chemical reactions (combustion, double displacement, single displacement etc.) Reactions in Aqueous solutions. | 2-3 weeks | Identifying unknown solutions  Types of Reactions |
| 12. Stoichiometry  (“Element Measure”) | Calculations of quantities in chemical reactions, limiting reactants, solving stoichiometry problems | 2-3 Weeks | % Yield |
| 13. States of Matter | Nature of gases, kinetic theory, boiling, evaporation, structure of solids liquids and gases | 1 week | Melting point of a compound |
| 14. Behavior of gases | Gas laws, properties of gases, real vs. ideal gases, diffusion | 2 weeks | Boyles Law |
| 15. Water and Aqueous solutions | Properties of water, suspensions, polarity. | 1 week | TBD |
| 16. Solutions | Solution Rate, solubility, equilibrium, concentration, molarity. | 1-2 weeks | TBD |
| 19. Acids, bases, and salts | Acid base theories, hydronium ions, hydroxide ions, pH, pH indicator, titration, neutralization reactions. | 2 Weeks | Titrations  pH identification  Neutralization reactions |
| 25. Nuclear Chemistry | Radiation, radioactivity, radioactive decay, fission, fusion. | 2 Weeks | Half life |

* ***This is a tentative schedule***; we will more than like not finish all of these topics. If we do happen to run out of time, chapter 25 will move ahead of 15.
* Lab will typically take up to 2 days’ time. You will conduct a pre lab, lab, and a post lab where you will analyze and report out your findings to discuss as a class.
* The lab column is all subject to change, I may change my mind on a lab due to chemical availability, time restraints, or I just may find a lab I like better.