

## Chem 101A Exam 1

### Chapter 1 – Chemical Foundations

- ✓ Scientific Method – Observation, Hypothesis, Experiment, Theory, Natural Law
- ✓ Precision vs Accuracy
- ✓ Significant Figures – Rules for Rounding (after addition/subtraction OR multiplication/division)
- ✓ Unit Conversions and Dimensional Analysis, Temperature Conversion, Density
- ✓ Classification of Matter
  - Mixtures – Heterogeneous or Homogeneous
  - Pure Substances – Elements or Compounds

### Chapter 2 – Atoms, Molecules, and Ions

- ✓ Scientists: Dalton, Millikan, Mendeleev, Rutherford, JJ Thomson
- ✓ Law of Conservation of Mass
- ✓ Law of Definite Proportion (water is always 89% Oxygen and 11% hydrogen)
- ✓ Law of Multiple Proportions (compounds with same elements—mass ratios can be reduced to whole numbers)
- ✓ Isotopes
- ✓ Ions – gained or lost electrons, monoatomic or polyatomic
- ✓ Periodic Table Classifications – Alkali Metals, Alkaline Earth metals, Transition metals, lanthanides, actinides, halogens, noble gases
- ✓ Nomenclature *Note: this will be about ~18% of the exam*
- ✓ Ionic Compounds
  - Ionic Compounds (e.g.  $\text{Cu}_2\text{O}$ )
  - Binary Molecular Compounds (e.g.  $\text{CO}_2$ )