CHM 161 – Chemistry for the Life Sciences
Study Guide for Exam I

All conversions and equations and a periodic table will be given to you. The **only conversions you need to know are within a metric unit.** For example, you should be able to convert mg to g; km to m (or to cm to mm to nm etc. **see p. 17, Table 1.6**). (W.E. = Worked Example)

CH 1 – Matter and Life

- States of Matter, Worked Example (W.E.) 1.1, 1.2
- Be able to identify chemical vs. physical changes (1.1); chemical vs. physical properties
- Know symbols and names for first 20 elements (you will be given a periodic table with symbols). Also know Fe, Cu, Ag, Au, Hg
- Differences between elements, compounds and mixtures (p. 7), W.E. 1.2, 1.3, 1.4

CH 2 – Measurements in Chemistry

- **Significant Figures**: know how many should appear in answers to conversion problems, W.E. 1.3, 1.11
- **Scientific notation**: W.E. 1.4, 1.5; 1.13-1.15
- **Unit conversions**: given conversion, set up and carry out any unit conversions – SHOW WORK using dimensional analysis. W.E. 1.9, 1.10, 1.11; 1.19
- **Multiple conversions**: see worked problem 1.12; dose problems 1.21, 1.72-1.82
- **1.13** - Temperature scales and conversion from ^{o}C to ^{o}F or vice versa; worked example 1.14; 1.23, 1.83
- **1.14** - Density = mass/volume Given two of these, solve for the third (see quiz 2, q.3), W.E. 1.16; 1.26-1.29, 1.90, 1.91, 1.94, 1.121

CH 3 – Atoms and the Periodic Table

- **Atomic theory**
- **Mass number**, **atomic number** determining the number of subatomic particles (protons, neutrons and electrons) from a symbol with mass# and atomic #. 2.44-2.50
- **Isotopes –** define, 2.45-2.50
- **Atomic mass (weight)** – Average weight of one atom of an element in amu. What is the difference between atomic mass and mass number? Unit conversions involving amu, grams, atoms. 2.52-2.53.
- **Electrons**: electron configurations and the periodic table. Energy levels (shells) and sub-shells (s,p,d,f)
- **Periodic Table** – Metals, non-metals, metalloids – located where on periodic table? 2.54-2.65
- **Groups and Periods**; what does an element's group and period # mean as regarding that element's electrons?
- **Electron Configurations** – $1s^2 2s^2 sp^6$ etc. 2.66-2.83
- **We did not cover section 2**.9