CH304K Topics

Catalog description of 304K, Chemistry in Context I:
Designed for non-science majors. Chemistry 304K and 305 form a two-semester sequence designed to fulfill the science requirement for students not majoring in science or engineering. Issues of contemporary interest and importance, such as ozone depletion and global warming, motivate the discussion; the underlying chemistry is developed as needed. Social, political, economic, and ethical implications of scientific developments and science policy are considered. Chemistry 304K addresses the nature of matter, energy, chemical reactions, and chemical thermodynamics.

Basic Chemistry Topics for 304K (With an understanding that the instructor will go beyond these basic topics to discuss application of the topics to important issues in our society.)

- Basic definitions: molecule, atom, element, compound, moles
- Periodic table:
  - Period vs group, periodicity
  - Discussion of important groups (halogens, noble gases, etc.)
  - Areas of the periodic table (metals, nonmetals)
- Writing and balancing chemical equations
- Fundamental particles of an atom: protons, neutrons, electrons
- Isotopes
- Valence electrons and formation of ions
- Naming of two-element covalent and ionic compounds
- Drawing dot structures for compounds that follow the octet rule
- Determining electronic and molecular geometries of molecules through tetrahedral
- Exothermic versus endothermic changes
- Activation energy
- Using bond energies to calculate energy changes in chemical reactions
- Light: $c = \lambda v$, $E=hv$

Other topics that are covered by many instructors, but not necessarily all:

- Naming of compounds with transition metals or polyatomic ions
- Drawing dot structures for compounds that are exceptions to the octet rule
- Drawing dot structures for larger compounds with more than one central atom
- Understanding potential energy diagrams
- Balancing nuclear reactions
- Half-life