I. Matter
   A. All matter consists of atoms held together by energy
   B. Mass and energy are the *building blocks* of matter

II. Atom
   A. Mass held together by energy
   B. Nucleus and subatomic particles

III. Subatomic particles
   A. Protons
      1. charge and mass
      2. atomic number
   
   B. Neutrons
      1. uncharged
      2. part of atomic mass
   
   C. Electrons
      1. charged
      2. related to number of protons
         3. “orbits” or “energy levels”
         4. filled from inside out
   
      5. valence
      6. transferal
         - oxidation
         - reduction

IV. Elements
   A. All matter consists of discrete elements.
   B. The smallest particle of an element is an atom.
   C. A substance that is composed of a single kind of atom is an element.
   D. Includes all isotopes
V. Isotopes

VI. Chemical Bonding--the means by which different atoms can join to form a molecule
   A. The character of electrons determines how atoms will join together
      1. atoms sometimes lose or gain electrons
      2. ions:
   
   B. Formation of molecules
   
   C. Bonds
   
   D. Why atoms may bond:
   
   E. NaCl
   
   F. Ionic bonds
      1. relatively strong
      2.
      3.
   
   G. Covalent bonds
      1. sharing of valence electrons
      2. atoms use “shared” electrons to fill “shells”
   
   H. Polar Covalent
      1. sharing atoms not identical
      2. shared pair more attracted to one of the bonded atoms
      3. polar molecules are attracted to other polar molecules
   
   I. Hydrogen bonds
      1. attraction between the positive end of one polar molecule and the negative end
         of another polar molecule
      2.
      3.