ANNO ACCADEMICO 2017/2018

CORSO di STUDIO in Scienze Geologiche
INSEGNAMENTO in Chimica Generale e Inorganica con Elementi di Organica

DOCENTE Prof.ssa Daniela Pappalardo

The chemical and physical properties of matter. Elements, mixtures, compounds. The atomic theory of matter. The fundamental laws of the chemistry. The Avogadro hypothesis. Atomic weights and the mole concept. Isotopes. Molecular formula.
Nomenclature of inorganic compounds. Chemical reactions (acid-base, redox, interchange). Balance of chemical reactions. Stechiometry.
Atomic structure. Experiments of Thomson, Millikan, Rutherford. The atomic model of Bohr. The orbitals of the hydrogen atom, the quantum numbers, the spin number. Electronic configurations; the Aufbau principle.
Periodic table and periodic properties: atomic radius, ionization energy, electronic affinity, electronegativity.
Chemical bonds. Covalent bond theory. Molecular geometry and the Lewis theory. VSEPR theory. The formation of hybrid orbitals. Inter-molecular attractions forces.
Gases. The theory of ideal gas. The gases laws. The kinetic theory of gases.
Solids. Amorphous and crystalline solids. Molecular, ionic, covalent solids. The metals.
Liquids and solutions. The vapor tension. State diagrams. Solutions. Molarity, molality, molar fractions. The Raoult law, the Henry law. Solubility. Colligative properties.
Kinetic of reactions. Reaction rate theory. Arrhenius equation.
Thermodynamics principles (I and II).
Equilibrium in the chemical reactions. Homogeneous and heterogeneous equilibriums. Acid-base equilibriums. Scale of pH. Tampon solutions. Hydrolysis and solubility reactions.
Electro-chemistry. The electrolysis, and the Faradays laws. Galvanic cells. The Nernst equation.
Elements of organic chemistry.