

Syllabus CHEMISTRY for General Medicine-Topics

A) Basic and Inorganic Chemistry-Topics

- Units of basic physical parameters; Conversion of units.
- Pure substances and mixtures.
- Atom, atom models; structure of atom and subatomic particles.
- Quantum mechanics theory for electrons energy and Electron configurations.
- Symbols of the elements. Periodic table and properties of the elements.
- Stoichiometry; Weight (mass) of atoms/substances relationships (atomic number, atomic mass number, molecular mass...); Concept of mole and amount of substance.
- Nomenclature and formula writing of inorganic compounds.
- Solutions, properties of solutions; Expressing Concentrations of solutes (expressing and calculating concentration, weight, volume percent, molarity);
- Chemical bonds; Ionic bonds; Polar and nonpolar covalent bonds; Metal bonds; Hydrogen bonds.
- Chemical Reactions; Kinetics of chemical reactions. Activation energy and catalysis.
- Chemical Equilibria; Electrolytic dissociation. Dissociation constant. Strong and weak electrolytes; Acid, bases, Concept of pH.
- Hydrolysis of salts.
- Buffers-definition and important buffers in physiology.
- Oxidation-reduction reactions.
- Important gasses in medicine.

B) Organic chemistry-Topics

-Structure, nomenclature and reactions of alkanes, alkenes, alkynes, alkylhalides, alcohols, ethers, aldehydes, ketones, carboxylic acids and their derivatives (esters, amides).

- Aromatic compounds–structure, nomenclature and specific reactions of aromatic compounds; Phenols.

- Amines and other nitrogen organic systems; -Aromatic heterocyclic compounds.

LITERATURE

1. D. D. Ebbing, S. D. Gammon, “General Chemistry” 9th edition, Houghton Mifflin Company, Boston, New York, 2007.

Link to the book in free pdf format: [General Chemistry, Enhanced 9th Edition \(iranchembook.ir\)](http://iranchembook.ir)

(this book is the most important one)

2. General Chemistry-Principles, Patterns and Applications, The Saylor Foundation,

Link to the book in free pdf format: [General Chemistry Principles, Patterns, and Applications.pdf \(saylor.org\)](http://saylor.org)

3. General Chemistry (with practice problems) Wikibooks, 2013.

Link to the book in free pdf format: [GeneralChemistry.pdf \(wikimedia.org\)](http://wikimedia.org)

4. A. Jones, Chemistry-An Introduction for Medical and Health Sciences, Wiley&Sons, 2005.

Link to the book in free pdf format: [Chemistry: An Introduction for Medical and Health Sciences \(wordpress.com\)](http://wordpress.com)