

LECTURES

Wednesday 10:10 – 12:00

<i>Week</i>	<i>Date</i>	
1	23 Sept.	Solutions of substances. Colligative properties of solutions, osmotic pressure. Dissociation of electrolytes, the equilibria in electrolyte solutions. Protolytic reactions: acids and bases, pH values, calculations.
2	30 Sept.	Hydrolysis of ions. Buffers. Buffers in the human body. Liquid colloid dispersions. Surfactants (tensides).
3	7 Oct.	Chemical reactions – kinetics, chemical equilibrium. The driving force of chemical reactions, free Gibbs energy.
4	14 Oct.	Oxidation-reduction reactions. Redox potentials, the e.m. force of a voltaic cell and the relation of it to the reaction free energy change and equilibrium constant. Dissolution equilibria. Precipitation reactions.
5	21 Oct.	Essential macroelements important for living matter, properties of some of their compounds. Hazardous inorganic chemicals.
6	<i>28 Oct.</i>	----- (legal holiday)
7	4 Oct.	Biochemically important conversions of organic compounds (reactions of alcohols, oxidations and reductions, the citric acid cycle, transaminations of amino acids).
8	11 Nov.	Heterocyclic compounds of biological importance (cofactors, synthetic pharmaceuticals, drugs).
9	18 Nov.	Structures and properties of monosaccharides and simple sugar derivatives. Oligosaccharides.
10	25 Nov.	Polysaccharides. Glycosides, nucleosides. Nucleotides, nucleic acids.
11	3 Nov.	Fatty acids and lipids-comprising alcohols. Triacylglycerols. Phospholipids and glycolipids.
12	9 Dec.	Eicosanoids. Isoprenoids. Steroids, structures of representative compounds.
13	16 Dec.	Standard α -amino acids, polarity of the side chains, ionization of amino acids, amino acids as buffers. Peptides, some examples of peptides exhibiting biological activity.
14	6 Jan.	Proteins – main features of structures. Globular, fibrous, and membrane proteins. Glycoproteins. Haemoproteins (haem and other tetrapyrroles)

Recommended textbooks:

Táborská, Sláma, et al.: Medical Chemistry I (General and Inorganic Chemistry). Masaryk Univ., 2006
 Dostál et al.: Medical Chemistry II (Bioorganic Chemistry). Masaryk University, 2006