

LECTURES

Wednesday 10:10 – 12:00

<i>Week</i>	<i>Date</i>	
1	22 Sept.	Solutions of substances. Colligative properties of solutions, osmotic pressure. Dissociation of electrolytes, the equilibria in electrolyte solutions. Acid-base reactions: acids and bases, pH values, calculations.
2	29 Sept.	Hydrolysis of ions. Buffers. Buffers in the human body. Liquid colloid dispersions. Surfactants (tensides).
3	6 Oct.	Chemical reactions – kinetics, chemical equilibrium. The driving force of chemical reactions, free Gibbs energy.
4	13 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	20 Oct.	Essential macroelements important for living matter, properties of some of their compounds. Hazardous inorganic chemicals.
6	27 Oct.	Biochemically important conversions of organic compounds (reactions of alcohols, oxidations and reductions, the citric acid cycle, transaminations of amino acids).
7	3 Nov.	Heterocyclic compounds of biological importance (cofactors, synthetic pharmaceuticals, drugs).
8	10 Nov.	Structures and properties of monosaccharides and simple sugar derivatives. Oligosaccharides.
9	17 Nov.	-----legal holiday (substitutive lecture 22th December)
10	24 Nov.	Polysaccharides. Glycosides, nucleosides. Nucleotides.
11	1 Dec.	Fatty acids and lipids-comprising alcohols. Triacylglycerols. Phospholipids and glycolipids.
12	8 Dec.	Eicosanoids. Isoprenoids. Steroids, structures of representative compounds.
13	15 Dec.	Standard α -amino acids, polarity of the side chains, ionization of amino acids, amino acids as buffers.
	22 Dec	<i>Substitutive lecture</i> Nucleic acids
14	5 Jan.	Peptides, some examples of peptides exhibiting biological activity. 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

