

SCHEDULE OF LECTURES, SEMINARS, PRACTICALS IN ACADEMIC 2023/2024.

Week	Lecture (3 classes), Thursday, 8:15-10:30 h Main building	Seminar (2 classes), 1 st , 2 nd and 3 rd group Thursday, 15-16:30 Institute+ biochemistry lab	Lab (3 classes) 1 st , 2 nd and 3 rd Group, Thursday, 16:45-19 Institute
I 2.-6.10.2023.	L-1. Water. The structure of water. Intra and intermolecular bonds. Covalent bond. Non-covalent interactions. The structure of biomolecules as a consequence of interaction with water. Aqueous solutions: solutions and colloids. Assoc. prof. dr N. Avramović, 5.10.2023.	S-1. Concentrations of solutions: mass, molar, molal; ion concentrations; osmolarity of the solution. Numerical problems. KG, LIŽ, AM 5.10.2023.	P-1. Basic laboratory techniques. Use of balance, pipettes. Preparing a solution of a particular concentration: by measuring the solid substance and diluting the solution. LIŽ, AM, SV 5.10.2023.
II 9.-13.10.2023.	L-2. Thermodynamic changes during chemical reactions in living systems. Chemical kinetics. Factors affecting the rate of reaction. Transition state, activation energy. Chemical equilibrium, equilibrium constant. Prof. dr K. Gopčević, 12.10.2023.	S-2. Energetics: enthalpy, entropy, free energy of biomolecules. Spontaneity of reactions. Kinetics of biologically important chemical reactions. Numerical problems. KG, DK, LIŽ, 12.10.2023.	P-2. Determination of the activation energy of sucrose hydrolysis in an acidic medium by colorimetric method. LIŽ, AM, SV 12.10.2023.
III 16.-20.10.2023.	L-3. Electrolytes. Theories of acids and bases. Dissociation constant of acids and bases. Acid-base equilibrium. Amphoteric electrolytes. Ionic product of water, pH. Neutralization, salts, types of salts. Salt hydrolysis. Solubility product. Prof. dr D. Krstić, 19.10.2023.	S-3. Numerical problems. Equilibria in aqueous solutions. KG, DK, AM, 19.10.2023.	P-3. Buffers, mechanism of action, capacity. Preparation of buffer solution. Calculation tasks from the buffer. Serial dilutions of solutions. AM, SV, TD 19.10.2023.
IV 23.-27.10.2023.	L-4. Structure and classification of organic molecules. Double bond reactivity, geometric isomerism. Aromatic and heterocyclic compounds. Resonance of aromatic compounds. Prof. dr K. Gopčević, 26.10.2023.	S-4. Structure and isomerism of organic compounds. Repetition of general chemistry. KG, DK, NA, 26.10.2023.	P-4. Serum electrolytes. Quantitative determination of Ca ²⁺ , Cl ⁻ , HCO ₃ ⁻ ions. NA, SV, ZL 26.10.2023.
	I COLLOQUIUM, SATURDAY, 28.10.2023. 14-15 h (GENERAL CHEMISTRY) Institute RE 1st COLLOQUIUM, FRIDAY 3.10.2023. 15-16, Institute		

<p style="text-align: center;">V 30.10.-3.11.2023.</p>	<p>L-5. Reactivity of the hydroxyl group in alcohols and phenols. Sulfhydryl group. Carbonyl group in aldehydes and ketones. Amines, aminoalcohols and biogenic amines. Prof. dr D. Krstić, 2.11.2023.</p>	<p>S-5. Reactivity of biologically important functional groups. KG, NA, LIŽ, 2.11.2023.</p>	<p>P-5. Reactions of hydroxy, amino, mercapto, carboxyl functional groups. Reactions of urea. LIŽ, AM, SV, 2.11.2023.</p>
<p style="text-align: center;">VI 6.11.-10.11.2022.</p>	<p>L-6. Carboxylic acids. Derivatives of carboxylic acids. Derivatives of carbonic acid. Redox reactions of organic and biomolecules. Standard and biological redox potentials. Free radicals and antioxidants. Assoc. prof. dr N. Avramović, 9.11.2023.</p>	<p>S-6. Structure, stereochemistry and reactivity of biologically important substituted acids (hydroxy, oxo). KG, DK, NA, 9.11.2023.</p>	<p>P-6. Redox reactions of organic and biomolecules. Colloidal solutions of biomacromolecules. AM, SV, TĐ 9.11.2023.</p>
<p style="text-align: center;">VII 13.11.-17.11.2023.</p>	<p>L-7. Chemical reactions of amino acids. Peptide bond. Biologically important peptides. Structural levels: primary, secondary, tertiary and quaternary. Domains. Prof. dr K. Gopčević, 16.11.2023.</p>	<p>S-7. Conformational <i>in vivo</i> and <i>in vitro</i> changes of proteins (denaturation, renaturation). Complex proteins. DK, NA, LIŽ, 16.11.2023.</p>	<p>P-7. Colored and precipitation reactions of proteins. Bioinformatic (<i>in silico</i>) protein analysis. NA, SV, ZL 16.11.2023.</p>
<p style="text-align: center;">VIII 20.11.-24.11.2023.</p>	<p>L-8. Structure and properties of purine and pyrimidine bases, nucleosides and nucleotides. Structure and properties of nucleic acids (RNA and DNA). Fatty acids. Structure and properties of simple and complex lipids. Prof. dr D. Krstić, 23.11.2023.</p>	<p>S-8. Glycero and sphingophospholipids; structure of membranes. Sterols, steroids, bile acids, hormones, vitamins. DK, NA, LIŽ, 23.11.2023.</p>	<p>P-8. Hydrolysis of triglycerides and performing specific reactions on the obtained components. Addition to unsaturated fatty acids. Quantitative determination of cholesterol. Acid hydrolysis of nucleoproteins. Identifying building components of nucleoproteins. Bioinformatics (<i>in silico</i>) analysis of lipids NA, LIŽ, SV 23.11.2023.</p>
<p style="text-align: center;">IX 27.11.-1.12.2023.</p>	<p>L-9. Protein-ligand interactions. Biomolecules as catalysts. Basics of proteomics technology. Carbohydrates. Stereochemistry and reactivity of monosaccharides. Reducing and non-reducing disaccharides. Polysaccharides. Assoc. prof. dr L. Izrael-Živković, 30.11.2023.</p>	<p>S-9 Medically important reactions of carbohydrates. Glycoproteins and glucosaminoglucans in medicine. KG, DK, AM, 30.11.2023 .</p>	<p>P-9. Reduction reactions of mono- and disaccharides. Color reactions of monosaccharides. Sucrose inversion. Hydrolysis of starch with HCl. Bioinformatic (<i>in silico</i>) analysis of carbohydrates. AM, SV, TĐ, 30.11.2022.</p>
<p style="text-align: center;">X</p>	<p style="text-align: center;">II TEST COLLOQUIUM, SATURDAY 9.12. 2023. 14-16 (ORGANIC CHEMISTRY AND CHEMISTRY OF NATURAL PRODUCTS)</p>		

	<p style="text-align: center;">Institute RE IInd COLLOQUIUM, FRIDAY, 15.12. 2023. 15-17, Institute</p>
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