Approved
at the Chair of Biochemistry and Clinical Biochemistry
meeting of _____, Minute Nr._____
Head of the Chair, MD, dr., prof.
_____ Olga Tagadiuc

SYLLABUS
in Biochemistry for 1st year students of Faculty of Medicine,
autumn semester (1st), academic year 2024-2025

N	Date	Theoretical classes	Practical classes
1	04-08.11.24	Biochemistry in the medical education system. Macro, microelements, chemical bonds, functional groups. Amino acids: structure, role, classification, properties.	The importance of biochemistry for medical disciplines. Functional groups and types of chemical bonds specific to biomolecules. Amino acids - biomedical role, structure, classification and properties.
2	11-15.11.24	The role and classification of proteins. Levels of organization of protein structures.	Role, structure and clasification of proteins.
3	18-22.11.24	Physico-chemical properties of proteins. Methods of protein separation, purification and quantity assay	Physico-chemical properties of proteins. Methods of protein separation, purification and quantity assay
4	25-29.11.24	Nucleoproteins. Their biological role. Classification. The chemical structure of nucleic acids. Nitrogen bases, nucleosides and nucleotides - structure, nomenclature and properties.	Nucleoproteins. Their biological role. Classification. The chemical structure of nucleic acids. Nitrogen bases, nucleosides and nucleotides - structure, nomenclature and properties. Levels of structural organization of DNA and RNA.
5	02-06.12.24	Levels of structural organization of DNA and RNA.	**Concluding test on chapter „Structure of proteinelor and nucleic acids”.**
6	09-13.12.24	Chemical nature and structure of the enzyme. Vitamins as coenzymes. Mechanism of action of the enzymes. Nomenclature and classification of enzymes.	Chemical nature and structure of the enzymes. Vitamins as coenzymes. Mechanism of enzymes action. Classificaation of enzymes. Identification of vitamins B1, B2, B6, PP (B5).
7	16-20.12.24	Enzyme properties. Regulation of the enzyme activity. Enzymes in diagnosis and therapy. Methods of separation, purification and determination of enzyme activity.	Kinetics of enzymatic reactions. Regulation of enzyme activity. Enzymes utilisation in medicineDetermination of enzymatic activity. Alfa-amylase activity assay.

8	23-24.12.24 – 09-11.01.25	Metabolism. Phases. Stages. Energy metabolism. Thermodynamic law. High energy compounds.	General concepts about metabolism. Oxidative decarboxylation of pyruvic acid. Krebs cycle. Determination of pyruvate in the urine.
9	13-17.01.25	Oxidative decarboxylation of pyruvic acid. Krebs cycle: the role; reactions; regulation.	Biological oxidation. Respiratory chain and oxidative phosphorylation. Qualitative and quantitative determination of catalase.
10	20-24.01.25	Biological oxidation. Respiratory chain and oxidative phosphorylation	**Concluding test on chapters "Enzymes" and "Bioenergetics"**
11	27-31.01.25	Carbohydrates: biological role and classification. Digestion and absorption of carbohydrates. Glycogen metabolism.	Carbohydrates: classification and biological role. Digestion and absorption of carbohydrates. Glycogen metabolism. Fehling reaction. Seliwanoff reaction.
12	03-07.02,25	Aerobic and anaerobic glycolysis: reactions, regulation, energy balance. Alcoholic fermentation. Shuttle-systems malate-aspartate and glycerol phosphate.	Glucose metabolism. Anaerobic glycolysis and aerobic oxidation of glucose. Gluconeogenesis. Determination of the fructose-1,6-diphosphate aldolase activity in blood serum.
13	10-14.02.25	Gluconeogenesis: reactions, regulation, energy balance.	Pentose phosphate pathway. Fructose and galactose metabolism. Regulation of carbohydrate metabolism. Acquired disorders of carbohydrate metabolism. Reaction of aldoses and ketoses differentiation.
14	17-21.02.25	Pentose phosphate pathway. Fructose and galactose metabolism.	**Concluding test on chapter "Carbohydrate metabolism".**

NOTE:
Responsible for the theoretical classes– MD, dr., associated professor, Svetlana Bobcova;
Duration of theoretical class - 2 hours, practical class - 3 hours.