

**Thematic plan for lecture-type classes  
in the discipline "Biochemistry, biochemistry of the oral cavity"  
for students of 2024 year of admission  
under the educational programme  
31.05.03 Dentistry,  
specialisation (profile) Dentistry,  
(Specialist's degree),  
form of study full-time  
for the 2025-2026 academic year**

№	Topics of lectures	
<b>second semester</b>		
1.	Subject of biochemistry. Structural organization and physicochemical properties of proteins. Conformational changes in the structure of protein.	2
2.	Enzymes. Mechanism of enzymatic catalysis. Cofactors and coenzymes. Regulation of enzyme activity by covalent modification. Proteolytic modification. Allosteric regulation.	2
3	Biological oxidation. Mitochondrial electron transport chain. ATPase. Regulation of oxidative phosphorylation. The common path of catabolism.	2
4	Carbohydrates. Digestion and absorption of food carbohydrates. Glycogen synthesis and degradation. Regulation of glucose storage and mobilization.	2
5	Carbohydrate metabolism. Anaerobic and aerobic glycolysis. Gluconeogenesis. Pentose phosphate pathway. Hormonal regulation of carbohydrate metabolism.	2
6	Lipids. Classification. Digestion and absorption of food lipids. Transport of lipids blood. Lipoproteins. Fat storage and mobilization in adipose tissue.	2
7	Lipid metabolism. Oxidative degradation and biosynthesis of fatty acids. Oxidation of glycerol. Biosynthesis of triacylglycerol. Cholesterol exchange.	2
8	Biological membranes. Membrane lipids and proteins. Mechanisms for transmembrane transport of substances. Mechanisms for transmitting hormonal signals to cells.	2
9	Amino acids. The ways of formation and degradation of free amino acids in the human body. Direct and indirect deamination. Types of direct deamination. Synthesis and breakdown of glutamine. Transamination of amino acids.	2
<b>third semester</b>		
1.	Matrix biosynthesis. Nucleic acids are carriers of genetic information. Relationship between structure and function. Replication, repair and recombination of DNA. RNA transcription and processing. Translation and post-translational protein modification.	2
2.	The main systems of intercellular communication. Classification of hormones. Target cells and cellular hormone receptors.	2
3.	Biochemistry of the tooth. Types of tooth tissues. Organic and mineral phases of tooth tissues. Biochemistry of the oral fluid.	2

Physicochemical properties of saliva. Saliva proteins. Enzymes of saliva. Inorganic substances of saliva. Protective systems of saliva.
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Considered at the meeting of the department of "29" \_05\_ 2025, protocol No 12

Head of the Department of Basic  
and Clinical Biochemistry



O.V. Ostrovskij.