Thematic plan for lecture-type classes
in discipline «Biochemistry»
for students of 2024 year of admission
under the educational programme
31.05.01 General Medicine,
specialisation (profile) General medicine
(Specialist's degree),
form of study full-time
for the 2025 - 2026 academic year

№	Topics of lecture-type classes	Hours
second semester		
1	Introduction. The subject and tasks of biochemistry. Physico-chemical bases of biochemical processes. Structural organization and physico-chemical properties of proteins.	2
2	Enzymes. Biological role. Mechanism and features of enzymatic catalysis. Cofactors and coenzymes. Kinetics of enzymatic reactions.	2
3	Principles of determining the activity of enzymes. Regulation of enzyme activity. Medical enzymology (enzyme diagnostics, enzyme therapy, enzymes in biotechnology). Regulation of intracellular metabolism by external signals.	2
4	Biological oxidation. High-energy compounds. Substrate and oxidative phosphorylation. Mitochondrial electron transport chain. ATP synthase. Regulation of oxidative phosphorylation. Disorders of energy metabolism.	2
5	Chemistry and metabolism of carbohydrate. Digestion and absorption of carbohydrates of food. Synthesis and breakdown of glycogen. Regulation of glycogen storage and mobilization. Anaerobic and aerobic breakdown of glucose. Glycolysis. Gluconeogenesis. Fermentation. Regulation of carbohydrate metabolism processes. Disorders of carbohydrate metabolism.	2
6	Lipids: structure, biological role, classification. Digestion and absorption of lipids of food. Transport of lipids. Lipoproteins. Storage and mobilization of fats in adipose tissue. Regulation of lipogenesis and lipolysis. β-oxidation and biosynthesis of fatty acids. Oxidation of glycerol.	2
7	Synthesis and utilization of ketone bodies in the body. Overproduction of ketone bodies ketonemia. Ketoacidosis. The biological role of cholesterol. Cholesterol biosynthesis. Regulation. Disorders of lipid metabolism in humans.	2
third semester		
8	Biochemical bases of storage and transmission of genetic information.	2
9	Basic intercellular communication systems. Classification of hormones. Target cells and cellular hormone receptors. Mechanisms of transmission of hormonal signals to	2

	cells.	
10	Metabolic processes in organs and tissues using the example of erythrocyte metabolism.	2
	Total	20

Considered at the department meeting fundamental and clinical biochemistry, protocol of «29» may 2025 y., № 12.

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