

AMENDMENTS AND CHANGES TO THE CURRICULUM IN THE EDUCATIONAL DISCIPLINE «BIOLOGICAL CHEMISTRY» for the specialty 1-79 01 08 «Pharmacy»

for 2024/2025 academic year

Amendments and changes	Basis/Reason
Changes have been introduced into the Explanatory Note (appendix 1)	Educational Plan for 2024/2025 academic year
Changes have been introduced into the Thematic Plan (appendix 2)	Educational Plan for 2024/2025 academic year
Changes have been introduced into the Educational Discipline Curricular Chart (appendix 3)	Educational Plan for 2024/2025 academic year
List of practical skills have been actualized (appendix 4)	Department meeting of 19.06.2024
12. The content of the topic «Regulation of enzyme action» was completed with data about the structure of enzyme active site of binding and molecular targets of garmin.	The acts of introduction of the research results to educational process
13. The content of the topic «Nucleoprotein metabolism» was completed with data about effect of various inhibitors of xanthine oxidase	

The curriculum is revised and approved at the department of biological chemistry meeting (protocol # 13 of 19.06.2024)

Head of the Department of Biological Chemistry

A.D. Taganovich

APPROVED

Dean of the Faculty of International Students

O.S. Ishutin

Changes in the Explanatory Note

Total number of hours for the study of the discipline is 205 academic hours, of which 132 classroom hours and 73 hours of student independent work. Classroom hours according to the types of studies: 18 hours of lectures (including 9 hours of supervised student independent work (SSIW)), 105 hours of laboratory classes.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

(FULL-TIME EDUCATION)

Code, name of the specialty	semester	Количество часов учебных занятий						Form of intermediate assessment
		total	in-class	из них			out-of-class self-studies	
				lectures	supervised student independent work	laboratory studies (practical)		
1-79 01 08 «Pharmacy»								
	5	95	66	9	6	51	29	Examination

THEMATIC PLAN
5 SEMESTER
(FULL-TIME EDUCATION)

Section (topic) name	Number of class hours	
	lectures	practical (laboratory or seminars)
12. Simple protein and amino acid metabolism	3	6
12.1.Digestion of proteins. The role of proteolysis. Pathways of amino acid utilization in the cell.	1,5	3
12.2.Ammonia detoxification. The fate of amino acid carbon skeletons	1,5	3
13. Nucleoprotein metabolism. Structure and synthesis of nucleic acids. Protein biosynthesis. Modern techniques of molecular biology	3	9
13.1.Structure and metabolism of nucleoproteins	1,5	3
13.2.Biosynthesis of nucleic acids and proteins. Modern techniques of molecular biology	1,5	6
14. Biochemistry of vitamins		3
15. Regulation of metabolism. Biochemistry of hormones	6	12
15.1. Principal mechanisms of metabolism regulation. Mechanism of hormone action	1,5	3
15.2.Hormonal regulation of lipid, protein and carbohydrates metabolism.	1,5	3
15.3.Hormonal regulation of water and mineral balance	1,5	
15.4.Interrelations between carbohydrate, lipid and protein metabolism. Integration of metabolism		6
16. Functional biochemistry	3	9
16.1.Biochemistry of blood.	1,5	6
16.2.Biochemistry of liver.	1,5	3
17. Pharmaceutical biochemistry. Pharmacokinetics of drugs. Biotransformation of xenobiotics	1,5	12
Total hours	15	51

ACADEMIC DISCIPLINE CURRICULAR CHART

«BIOLOGICAL CHEMISTRY»

OF THE MODULE «HUMAN PHYSIOLOGY»

Section, topic #	Section (topic) name	Number of hours		Supervised student independent work	Practical skills	Form of control	
		lectures	practical (laboratory or seminars)			of practical skills	of current / intermediate assessment
5 semester							
	Lectures						
	Protein metabolism. Intracellular amino acid metabolism. Ammonia detoxification	1,5					
	Nucleic acid metabolism.	1,5					
	Matrix biosyntheses. Modern techniques of molecular biology	1,5					
	Biochemistry of hormones.	1,5					
	Biochemistry of hormones (continuation)	1,5					
	Pharmaceutical biochemistry	1,5					
	Intracellular amino acid metabolism.			1,5			
	Biochemistry of the liver			1,5			
	Biochemistry of the blood. System of hemostasis			1,5			
	Biochemistry of nutrition. Macro- and microelements. Regulation of water and mineral balance			1,5			

Practical (laboratory or seminar) lessons							
6.1	Nitrogen balance. Digestion absorption of proteins Lab. work: 1. Analysis of gastric juice acidity.			3		Analysis of gastric juice acidity	Written laboratory report with oral defense interviews, surveys, tests, online tests
6.2	Intracellular amino acid metabolism. Detoxification of ammonia. Lab. work: Determination of non-protein nitrogen in blood and urea in urine			3			interviews, surveys, tests, online tests
7.1	Chemistry and metabolism of nucleoproteins Lab. work: Determination of uric acid and total nitrogen in urine			3			interviews, surveys, tests, online tests
7.2	Matrix biosyntheses (synthesis of DNA, RNA, proteins). Modern techniques of molecular biology Lab. work: Analysis of yeast nucleoprotein hydrolysis products			3			interviews, surveys, tests, online tests
7.2	Colloquium «Simple proteins and amino acids metabolism», «Nucleoprotein metabolism», «Structure and synthesis of nucleic acids Protein biosynthesis. Techniques of molecular biology»			3			Colloquium *
9.1	Hormones. General characteristics and features of the hormone biological actions Lab. work: Qualitative reactions for hormones			3			interviews, surveys, tests, online tests
9.2	Hormonal regulation of metabolism Lab. work: glucose tolerance test			3			interviews, surveys, tests, online tests
10.2	Biochemistry of the liver Lab. work: Determination of total bilirubin in serum			3		Determination of total bilirubin in serum	Written laboratory report with oral defense interviews, surveys, tests, online tests
9.4	Integration of Metabolism Lab. work. Studying of hormones' impact on blood glucose level			3			interviews, surveys, tests, online tests
9.4	Colloquium «Regulation of metabolism. Hormones. Biochemistry of the liver. Integration of metabolism»			3			Colloquium *

10.1	Biochemistry of blood. Physical and chemical properties of the blood. Serum proteins Lab. work: Separation of serum proteins by electrophoresis on acetyl cellulose.		3				interviews, surveys, tests, online tests
10.2	System of hemostasis. Lab. work. Determination of calcium and chlorides in blood serum.		3		Determination of in blood serum.	Written laboratory report with oral defense	interviews, surveys, tests, online tests
8.	Biochemistry of nutrition. Role of proteins, fats, carbohydrates, vitamins Lab. work: Qualitative reactions for vitamins. Determination of vitamin C in urine		3		Determination of vitamin C in urine	Written laboratory report with oral defense	interviews, surveys, tests, online tests
11	Pharmaceutical Biochemistry. Biotransformation of substances in the body and their excretion Lab. work: Determination of the acetylsalicylic acid and paracetamol content and their metabolites in urine		3		Determination of the acetylsalicylic acid, diclophenac, tetracyclin and paracetamol content in urine	Written laboratory report with oral defense	interviews, surveys, tests, online tests
11	Colloquium «Biochemistry of the blood», «Biochemistry of the vitamins», «Regulation of water-salt and mineral balance», «Pharmaceutical Biochemistry of drugs. Biotransformation of xenobiotics»		3				Colloquium *
11	Analysis of gastric juice and urine.		3		Analysis of gastric juice acidity. Determination of the acetylsalicylic acid, diclophenac, tetracyclin and paracetamol in urine	Written laboratory report with oral defense*	

11	Final lesson « Simple protein and amino acid metabolism. Metabolism of nucleoproteins. Structure and synthesis of nucleic acids. Protein biosynthesis. Techniques of molecular biology. Regulation of metabolism. Biochemistry of hormones. «Functional biochemistry «Biochemistry of vitamins», «Pharmaceutical biochemistry. Pharmacokinetics of drugs. Xenobiotics biotransformation»	3						Interview
	Detection and assessment of the students' knowledge in biological chemistry							Examination *

* This is a mandatory form of current certification (each student will receive a mark)