Approved
at the Chair of biochemistry and clinical biochemistry
meeting of 29.08.2019, minute no.1
Chief of the Chair, MD, PhD, assoc. prof.
_____ Olga Tagadiuc

SYLLABUS
in Biochemistry for 2nd year students of Faculty of Medicine, autumn semester, academic year 2019-2020

		Autumn semester (3), 2nd year	
N	**Data**	**Theoretical classes**	**Practical classes**
1	02-06.09.	The role of biochemistry in the medical education system. Chemical nature and structure of the enzyme. Mechanism of action of the enzymes. Nomenclature and classification of enzymes.	Introductive conversation. Importance of biochemistry for medical disciplines. Chemical nature and structure of the enzymes. Identification of vitamins B1, B2, B6, PP (B5).
2	09-13.09	Enzyme properties. Regulation of the enzyme activity. Enzymes in diagnosis and therapy. Methods of separation, purification and determination of enzyme activity.	Mechanism of enzymes action. Vitamins as coenzymes. Thermolability of catalase.
3	16-20.09	Vitamins as coenzymes.	General properties of enzymes. Determination of enzymatic activity. alfa-amylase activity assay.
4	23-27.09	General metabolism. Energy metabolism.	**Concluding test on chapter "Enzymes"**
5	30.09-04.10	Oxidative decarboxylation of pyruvic acid. Krebs cycle: the role; reactions; regulation.	General concepts about metabolism.
6	07-11.10	Biological oxidation. Respiratory chain and oxidative phosphorylation.	Oxidative decarboxylation of pyruvic acid. Krebs cycle. Determination of pyruvate in the urine.
7	14-18.10	Carbohydrates: biological role and classification. Digestion and absorption of carbohydrates. Glycogen metabolism.	Biological oxidation. Respiratory chain and oxidative phosphorylation. Qualitative and quantitative determination of catalase.
8	21-25.10	Aerobic and anaerobic glycolysis: reactions, regulation, energy balance. Alcoholic fermentation. Shuttle-systems malate-aspartate and glycerol phosphate.	Carbohydrates: classification and biological role. Digestion and absorption of carbohydrates. Glycogen metabolism. Fehling reaction. Seliwanoff reaction.

9	28.10-01.11	Gluconeogenesis: reactions, regulation, energy balance.	Glucose metabolism. Anaerobic glycolysis and aerobic oxidation of glucose. Gluconeogenesis. Determination of the fructose-1,6-diphosphate aldolase activity in blood serum.
10	04-08.11	Pentose phosphate pathway. Fructose and galactose metabolism.	Pentose phosphate pathway. Fructose and galactose metabolism. Regulation of carbohydrate metabolism. Acquired disorders of carbohydrate metabolism. Reaction of aldoses and ketoses differentiation.
11	11-15.11	Regulation of carbohydrate metabolism. Disorders in carbohydrate metabolism.	**Concluding test on chapters "Bioenergetics" and "Carbohydrate metabolism".**
12	18-22.11	Lipids: classification and biological role. Digestion and absorption of lipids. Disorders in digestion and absorption of lipids. Resynthesis of lipids in intestinal epithelium.	Classification and functions of lipids. Digestion and absorption of lipids in the digestive tract. Determination of bile acids. Metabolism of storage lipids: biosynthesis and catabolism of triglycerides.
13	25.11-29.11	Metabolism of storage lipids: biosynthesis and catabolism of triglycerides. Biosynthesis of fatty acids. Beta-oxidation of fatty acids.	Biosynthesis of fatty acids. Beta-oxidation of fatty acids. Biosynthesis and use of ketone bodies. Determination of ketone bodies in urine.
14	02-06.12	Biosynthesis and catabolism of cholesterol. Biosynthesis and use of ketone bodies.	Metabolism of structural lipids biosynthesis and catabolism of cholesterol, phospholipids, sphingomyelins. Determination of cholesterol.
15	09-13.12	Metabolism of phospholipids and sphingomyelins.	Plasma lipoproteins. Lipid metabolism pathology. Liposoluble vitamins. Determination of beta-lipoproteins in blood serum.
16	16-20.12	Plasma lipoproteins.	**Concluding test on chapter "Lipids metabolism"**
17	09-10.01	Hereditary and acquired pathology of lipid metabolism.	**Exam admission**

NOTE: Responsible for the theoretical classes D and E series – MD, PhD, assoc. professor, Olga Tagadiuc;
Duration of theoretical class - 2 hours, practical class - 3 hours.