

THE CALENDAR-THEME SCHEDULE OF LECTURES
to biochemistry for 2ND year students of the medical faculty on the III (autumn) semester
(2017-2018 academic years)

№	Date	Theme of lecture	Lecturer	Time (h)
1	4 -8.09.	Intriduction. Enzymes: structure, properties, classification. Isoenzymes, multienzymes. Medical enzymology.	Associate prof. M.M.Chervyack	2
2	18 - 22.09.	Cofactors and coenzymes: definitions, classification. Characteristics of cofactors of the 1-st and 2-nd groups. Vitamins. Basic concepts of vitaminology. Water- and lipid soluble vitamins.	Associate prof. M.M.Chervyack	2
3	2 - 6.10.	Common metabolic pathways. Bioenergetics. Oxidative decarboxylation of pyruvate. Citric Acid Cycle. Biological oxidation. Tissue respiration. Oxidative phosphorylation.	Associate prof. M.M.Chervyack	2
4	16 - 20.10.	Metabolism of carbohydrates. Carbohydrates: definition, biological value. Digestions of carbohydrates in the GIT. Metabolisms: glycolysis, glycogenolysis, aerobic oxidation of glucose, pentose phosphate pathway. Gluconeogenesis. Metabolism of fructose and galactose. Metabolism of glycogen, glycogen storage diseases. Metabolism of glucoconjugates. Regulation and pathology of carbohydrates metabolism.	Associate prof. M.M.Chervyack	2
5	30.10 - 3.11.	Metabolism of lipids-1. Classification, biological value of lipids. Lipid peroxidation. Digestions of lipids in GIT. Bile acids. Transport forms of lipids. Catabolism of triacylglycerols, β -oxidation and synthesis of fatty acids.	Associate prof. M.M.Chervyack	2
6	13 - 17.11.	Metabolism of lipids-2. Lipogenesis: synthesis of neutral fats, phospho- and glycolipids. Lipogenic and lipotropic factors. Sphingolipids: concept, metabolism, its pathology. Metabolism of cholesterol and ketone bodies. Regulation and pathology of lipid metabolism.	Associate prof. M.M.Chervyack	2
7	27.11.-1.12.	Metabolism of simple proteins. Biological value of proteins. Digestion of proteins in the GIT. Putrefaction. General pathways of amino acids metabolism: transamination, decarboxylation, deamination. Ways of ammonia neutralisation. Individual metabolism of amino acids. Molecular diseases.	Associate prof. M.M.Chervyack	2
8	11 - 15.12.	Molecular biology. I and II postulates. Hereditary information transfer. Genetic code. Replication. Transcription. Translation.	Associate prof. M.M.Chervyack	2
			Total	16

**THE CALENDAR-THEME SCHEDULE OF LABORATORY LESSONS
to biochemistry for 2nd year students of the medical faculty on the III (autum) semester
(2017-2018 academic years)**

№	Date	Theme of laboratory lesson	Time (h)
1	4-6.09.	Subject and problems of biochemistry, directions of its development. Biomolecules. Simple and complex proteins: classification, properties, functions. Colour reactions to proteins and amino acids.	2
2	7-12.09.	Enzymes: chemical nature, classification, mechanisms of action. Display of pepsin and lipase actions.	2
3	13-15.09.	Properties of enzymes. Kinetics and energy of enzyme reactions. Principles of determination and units of enzyme activity. Specificity of enzyme action, relationship on temperature and pH.	2
4	18-20.09.	Enzymes activities regulation. Activators and inhibitors of enzymes, its values. Influence of activators and inhibitors on amylase activity.	2
5	21-26.09.	Cellular organization of enzymes. Isoenzymes, multienzyme complexes. Main directions of medical enzymology. Quantitative determination of amylase activity.	2
6	27-29.09.	Cofactors: definition, classifications. Non-vitamin, vitamin-like and vitamin coenzymes of the 1-st group. Determination of catalase activity in blood. Qualitative reactions to vitamins C.	2
7	2-4.10.	The 2-nd group of cofactors. Qualitative reactions to vitamins B ₁ , B ₂ , B ₆ , A and E as predictors of coenzymes.	2
8	5-10.10.	Common metabolic pathways. Oxidative decarboxylation of pyruvate. Citric Acid Cycle. Determination of succinate dehydrogenase activity.	2
9	11-13.10.	Biological oxidation. Tissue respiration. Comparison ROP of riboflavine and methyl blue. Determination of peroxydase activity in blood.	2
10	16-18.10.	Oxidative phosphorylation. Chemiosmotic Mitchell's theory. Quantitative determination of ATP.	2
11	19-24.10.	Concluding session "Common metabolic pathways"	
12	25-27.10.	Carbohydrates: definition, biological value. Metabolism of carbohydrates: anaerobic glycolysis, alcoholic fermentation. Qualitative reactions to monosaccharides. Determination of pyruvate and lactate.	2
13	30.10-1.11.	Aerobic oxidation of carbohydrates. Pasteur's effect. Pentose phosphate pathway. Quantitative determination of glucose in urine by Althausen.	2
14	2-7.11.	Gluconeogenesis. Metabolism of fructose and galactose. Quantitative determination of fructose-1,6-diphosphate.	2
15	8-10.11.	Glycogen metabolism. Glycogen storage diseases. Glucoconjugates. Polarimetry. Glucotest.	2
16	13-15.11.	Regulation and pathology of carbohydrates metabolism. Quantitative determination of glucose by glucose oxidase method.	2
17	16-21.11.	Lipids: definition, classification. Biological membranes. Lipid peroxidation, arachidonic acid cascade. Digestion of lipids in GIT. Bile acids. Transport forms of lipids. Determination of malonic aldehyde in blood. Influence of bile on lipase activity.	2
18	22-24.11.	Metabolism of lipids. Lipolysis: β -oxidation of fatty acids and glycerol, its hormonal regulation. Demonstration of acid properties of fatty acid. Determination of triacylglycerols and phospholipids sum.	2
19	27-29.11.	Lipogenesis: synthesis of fatty acids, triglycerides and phosphoglycerides. Determination of iodine number.	2
20	30.11.-5.12.	Metabolism of acetone bodies. Ketogenic and antiketogenic factors. Cholesterol: structure, metabolism. Metabolism of sphingolipids, its pathology. Regulation and pathology of lipids metabolism. Determination of acetone bodies in urine. Qualitative and quantitative determination of cholesterol.	2
21	6-8.12.	Concluding session "Metabolisms of carbohydrates and lipids"	2
22	11-13.12.	Simple proteins metabolisms: the norm of proteins in nutrition, nitrogenous balance. Valuable and non-valuable proteins. Digestion of proteins in GIT. Putrefaction of proteins. Determination of stomach juice acidity.	2
23	14-19.12.	General pathways of amino acids metabolism: transamination and decarboxylation. Biogenic amines. Quantitative determination of ALT activity in blood serum.	2
24	20-22.12.	Deamination of amino acids. Ways of ammonia neutralization. Quantitative determination of urea in biological fluids.	2
		Total	48