

THE CALENDAR-THEME SCHEDULE OF LECTURES
to biochemistry for 2nd year students of the pharmaceutical faculty (pharmacist) on the III
(autum) semester (2016-2017 academic years)

№	Date	Theme of lecture	Lecturer	Time (h)
1	8.09	Biochemistry as sciences. Enzymes: structure, properties, classification, mechanisms of action. Medical enzymology.	Associate prof. D.O.Filchukov	2
2	22.09	Cofactors and coenzymes: definitions, classification, values.	Associate prof. D.O.Filchukov	2
3	6.10	General regularities of metabolism. Molecular bases of bioenergetics.	Associate prof. D.O.Filchukov	2
4	20.10	Carbohydrates metabolism. Carbohydrates chemistry. Digestion of carbohydrates in the GIT. Anaerobic, aerobic and pentose phosphate pathways of glucose metabolism.	Associate prof. D.O.Filchukov	2
5	3.11	Gluconeogenesis. Metabolism of glycogen. Metabolic pathways of fructose and galactose. Regulation and pathology of carbohydrates metabolism.	Associate prof. D.O.Filchukov	2
6	17.11	Lipids metabolism. Lipids: definitions, classification, values. Biological membranes. Lipid peroxidation. Pro- and antioxidants. Digestion of lipids in GIT. Transport forms of lipids. Intracellular lipolysis: oxidations of fatty acids and glycerol.	Associate prof. D.O.Filchukov	2
7	1.12	Lipogenesis: synthesis of fatty acids, triglycerides and phosphoglycerides. Lipogenic and lipotropic factors. Metabolism of ketone bodies and cholesterol, its roles. Regulation and pathology of lipid metabolism. Hepatoprotectors.	Associate prof. D.O.Filchukov	2
8	15.12	Simple proteins metabolism. Digestion and putrefaction of proteins. General pathways of amino acids metabolism: transamination, decarboxylation, deamination. Biogenic amines as drugs. Sources of ammonia, its neutralization.	Associate prof. D.O.Filchukov	2
9	29.12.	Individual metabolism of certain amino acids. Molecular diseases.	Associate prof. D.O.Filchukov	2
10	12.01.	Molecular biology. Nucleic acids: definitions, classification, structure, values. Nucleotides chemistry and metabolism. General ways of information transfer: replication, transcription, translation.	Associate prof. D.O.Filchukov	2
			Total	20

Head of Biochemistry Department

Prof. Zaichko N.V.

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

No	Date	Theme of laboratory lesson	Time (h)
1	4-8.09	Introductory lesson. Safety rules. Subject and problems of biochemistry. Biomolecules. Simple and complex proteins: structures, properties, functions. Colour reactions to proteins and amino acids.	2
2	11-15.09	Enzymes: definition, nomenclature, classification, structures. Chemical natures. Specificity of enzymes action, dependences on temperature and pH.	2
3	18-22.09	Properties of enzymes. Activators and inhibitors of enzymes. Kinetics and energy. Influence of activators and inhibitors on amylase activity in saliva.	2
4	25-29.09	Cellular organization of enzymes. Isoenzymes, multienzymes. Main directions of medical enzymology. Quantitative determination of amylase activity.	
5	2-6.10	Cofactors: definition, classification. The 1-st group of coenzymes, chemical natures, mechanisms of action. Qualitative reactions to vitamins C. Determination of catalase activity in blood.	2
6	9-13.10	The 2-nd group of coenzymes. Qualitative reactions to vitamins B ₁ , B ₂ , B ₆ , A and E as predictors of coenzymes.	2
7	16-20.10	Common metabolic pathways. Oxidative decarboxylation of pyruvate. Citric Acid Cycle. Determination of succinate dehydrogenase activity.	2
8	23-27.10	Biological oxidation and tissue respiration. Oxidative phosphorylation. Quantitative determination of ATP.	2
9	30.10-3.11	Concluding session by themes “Enzymes, coenzymes, common metabolic pathways”	2
10	6-10.11	Carbohydrates: classification, structures, biological value. Metabolism of carbohydrates: glycolysis, alcoholic fermentation, Pasteur's effect, aerobic oxidation of glucose, energy balance. Quantitative determination of pyruvate. Quantitative determination of glucose in urine by Althausen. Glucotest.	2
11	13-17.11	Pentose phosphate pathway. Gluconeogenesis. Quantitative determination of fructose-1,6-diphosphate.	2
12	20-24.11	Glycogen metabolism. Glycogen storage diseases. Regulation and pathology of carbohydrates metabolism. Determination of glucose by glucose oxidase method.	2
13	27.11-1.12	Lipids: definition, classification. Biological membranes. Lipid peroxidation, arachidonic acid cascade. Digestion of lipids in GIT. Bile acids. Transport forms of lipids. Influence of bile on lipase activity.	2
14	4-8.12	Metabolism of lipids. Lipolysis: β -oxidation of fatty acids and glycerol. Determination of iodine number.	2
15	11-15.12	Lipogenesis: synthesis of fatty acids, triglycerides and phosphoglycerides. Lipogenic and lipotropic factors. Determination of triacylglycerols and phospholipids sum.	2
16	18-22.12	Metabolism of acetone bodies and cholesterol. Regulation and pathology of lipids metabolism. Qualitative and quantitative determination of cholesterol. Determination of acetone bodies in urine.	2
17	25-29.12	Concluding session by themes “Metabolisms of carbohydrates and lipids”	
18	1-5.01.2018	Simple proteins metabolisms: the norm of proteins in nutrition, nitrogenous balance. Digestion and putrefaction of proteins in GIT. General pathways of amino acids metabolism: transamination. Determination of stomach juice acidity. Quantitative determination of ALT activity in blood serum.	
19	8-12.01	Decarboxylation of amino acids. Biogenic amines. Deamination of amino acids. Ways of ammonia neutralization. Quantitative determination of urea in biological fluids.	
20	15-19.01	Specialised ways of acyclic and cyclic amino acids metabolisms. Enzymopathies. Determination of glutathione and cysteine sum.	
		Total	40