APPROVED
at the Chair meeting of 28.08.24, minute no.1,
Head of the Biochemistry and Clinical Biochemistry Chair,
MD, PhD., prof., Olga TAGADIUC _____

PLAN OF THE THEORETICAL AND PRACTICAL CLASSES
IN BASICS OF MEDICAL BIOCHEMISTRY, FACULTY OF DENTISTRY, SECOND YEAR, 2024-2025 ACADEMIC YEAR, FALL SEMESTER

Fall (3rd) semester, second year			
Nr	**Data**	**Theoretical classes**	**Practical lessons**
1	02-06.09.24	Lipids: structure, properties. Biologic role of lipids. Triglyceride metabolism. Metabolism of fatty acids.	Lipids: structure, properties, classification. The biological role of lipids. Digestion and absorption of lipids. Metabolism of reserve lipids. Oxidation of glycerol. *Bile acids identification*.
2	09-13.09.24		Metabolism of fatty acids. Beta-oxidation and biosynthesis of fatty acids. Biosynthesis and use of ketone bodies. *Ketone bodies identification.*
3	16-20.09.24	Metabolism of ketone bodies. Metabolism of structural lipids (cholesterol). Metabolism of plasma lipoproteins – representatives, composition, biomedical role, metabolism. Regulation of lipid metabolism.	Metabolism of structural lipids: biosynthesis and catabolism of cholesterol, phospholipids. Metabolism of plasma lipoproteins - representatives, composition, biomedical role, metabolism. Regulation of lipid metabolism. *Dosage of cholesterol. Determination of beta-lipoproteins.*
4	23-27.09.24		**Concluding test 1 “Lipid Metabolism”**
5	30.09-04.10.24	General ways of amino acid metabolism (transamination and oxidative deamination of Glutamic acid). The final products of nitrogen metabolism. Ammonia detoxification. Ureagenesis.	Digestion and absorption of proteins. Putrefaction of amino acids in the intestine. General ways of amino acid metabolism (transamination and oxidative deamination of Glutamic acid). *Gastric juice acidity assay*.
6	07-11.10.24		Biosynthesis of non-essential amino acids. The use of carbon skeletons of amino acids. End products of nitrogen metabolism. Ammonia

			detoxification mechanisms. Urea synthesis. Hyperammonemia and uraemia. *Dosage of urea in urine.*
7	14-18.10.24	Metabolism of nucleoproteins (general notions). Metabolism of chromoproteins.	Metabolism of purine and pyrimidine nucleotides. Metabolism of chromoproteins. Hemoglobin biosynthesis: location, substrates, equations of the first two reactions, regulation of the process. Porphyrias (general notions). Hemoglobin catabolism. Bilirubin: formation, conjugation, biliary excretion, its metabolism in the intestine. Hyperbilirubinemia. The main types of jaundice (prehepatic, hepatic and posthepatic). *Determination of uric acid in urine. Bilirubin assay in blood serum.*
8	21-25.10.24		**Concluding test 2 "Metabolism of simple and conjugated proteins”**
9	28.10-01.11.24	Hormones – structure, classification and biological role. Regulation of hormone synthesis and secretion. Mechanisms of action. Proteic hormones (hormones that regulate the metabolism of calcium and phosphates; insulin; glucagon) and hormones that are amino acid derivatives (adrenaline): metabolic effects.	The biochemical mechanisms of genetic regulation – replication, transcription, translation. DNA replication in prokaryotes - template, substrates, enzymes and protein factors. Biochemical mechanism and stages of DNA biosynthesis. Transcription in prokaryotes – template, substrates, enzymes, biochemical mechanism. Protein biosynthesis in prokaryotes. Peculiarities of replication, transcription and translation in eukaryotes. *Quantitative determination of DNA and RNA.*
10	04-08.11.24		Hormones – structure, classification and biological role. Regulation of hormone synthesis and secretion. Mechanisms of action. Proteic hormones (hormones that regulate the metabolism of calcium and phosphates; insulin; glucagon) and hormones that are amino acid derivatives (adrenaline): metabolic effects. *Adrenaline identification.*
11	11-15.11.24	Hormones of steroid (glucocorticoids) and thyroid nature (T_3 and T_4) – regulation of synthesis and secretion. Metabolic effects.	Cytosolic - nuclear mechanism of hormones action of steroid and thyroid nature (T_3 and T_4). Regulation of synthesis and secretion. Effects of hormones: glucocorticoids; thyroid (T_3 and T_4). *Identification of 17-ketosteroids in the urine. Dosage of calcium in blood serum.*

12	18-22.11.24		Blood. General composition. Chemical composition of blood plasma. Plasma proteins, blood enzymes, non-protein organic substances and mineral substances.
13	25-29.11.24	Blood. General composition. Chemical composition of blood plasma. Plasma proteins, blood enzymes and mineral substances. Biochemistry of saliva.	Biochemistry of saliva.
14	02-06.12.24		**Concluding test 3 "Genetic and Hormonal Regulation of Metabolism" “Biochemistry of humors (blood and saliva)”**
15	09-13.12.24	Integration of metabolism.	Evaluation of students individual work

Note:

- Tatiana Timercan, PhD, associate professor, is responsible for the theoretical classes at the Faculty of Dentistry.
- Duration of the theoretical class - 2 hours, practical lesson - 2 hours.