Стом-21ИН

Federal State Budgetary Educational Institution of Higher Education
«North-Ossetia State Medical Academy»
of the Ministry of Healthcare of the Russian Federation

APPROVED
Rector of FSBEI HE NOSMA
MOH Russia
O.V. Remizov
" 24" May 2023

EDUCATIONAL TRAINING PROGRAM OF DISCIPLINE
"Biological chemistry-biochemistry of the oral cavity"

the main professional educational program of higher education-specialty program in the specialty 31.05.03 Dentistry, approved on 24.05.2023

Form of education Full-time

The period of development 5

Department of Biological chemistry

Vladikavkaz 2023

When developing an educational training program, the discipline is based on:

1) FSES HE on specialty 31.05.03 Dentistry, approved by the Ministry of education and science of the Russian Federation in August 12, 2020 № 984

2) Academic plan of MPEP on specialty 31.05.03 Dentistry (Стом-21-01-21ИН, Стом-21-02-22ИН, Стом-21-03-23ИН), approved by the scientific Council of the FSBEI HE NOSMA of the Ministry of healthcare of the Russian Federation from "24" May 2023, Protocol № 8

The educational training program of the discipline was approved at a meeting of the department of Biological chemistry from"18" May 2023, Protocol № 10

The educational training program of the discipline was approved at a meeting of the central coordinating training and methodological council from "23" May 2023, Protocol №5

The educational training program of the discipline was approved by the scientific Council of the FSBEI HE NOSMA of the Ministry of healthcare of the Russian Federation from "24" May 2023, Protocol № 8

Developers:

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Contents of the work program

1. The name of the discipline;

2. List of planned learning outcomes for the discipline, correlated with the planned results of the educational program;

3. Indication of the place of the discipline in the structure of the educational program;

4. The amount of discipline in credit units, indicating the number of academic or astronomical hours allocated to the contact work of students with the teacher (by types of training sessions) and the independent work of students;

5. Content of the discipline, structured according to topics (sections) with indication of the number of academic or astronomical hours and types of study sessions allocated for them;

6. List of educational and methodological support for independent work of students on discipline;

7. Evaluation materials for conducting intermediate certification of trainees in discipline;

8. List of basic and additional educational literature necessary for mastering the discipline;

9. List of resources of the information and telecommunications network "Internet" (hereinafter referred to as the "Internet" network), necessary for mastering the discipline;

10. Methodical instructions for students to develop discipline;

11. List of information technologies used in the implementation of the educational process for discipline, including a list of software and information reference systems (if necessary);

12. A description of the material and technical base necessary for the implementation of the educational process for discipline.

13. Conducting educational activities using e-learning and distance learning technologies.

2. The list of planned learning outcomes for the discipline and the results of mastering the educational program.

№	Competency number / index	Content of the competence (or part of it)	Topic of the lesson (section)	Indicators of competence achievement	Results of development		
					know	be able to	own
				5	6	7	8
1.	GPC-5	Able to conduct a patient examination in order to establish a diagnosis when solving professional tasks	Introductory lesson. Proteinogenic amino acids: structure, properties, classification. The role of oxy-amino acids in the formation of connective tissue proteins. Chemistry of simple proteins, structural organization of a protein molecule. Physico-chemical properties of simple proteins. Chemistry of complex proteins: classification, representatives, characteristics of prosthetic groups. Glycoproteins, their role in the formation of bone and tooth tissue. Proteoglycans and glycosaminoglycans of oral cavity tissues. Structure and properties of collagen proteins of oral cavity tissues. Collagen, structure, biosynthesis. Structure and properties of noncollagen proteins of oral cavity tissues. Adhesive and anti-adhesive proteins. Structure and general properties of enzymes. The mechanism of enzymatic catalysis. Classification of enzymes. Vitamins as coenzymes. Water-soluble vitamins. Regulation of enzymes activity. Enzymes	AI -2 GPC-5 Be able to make a plan for laboratory and instrumental diagnostics.	To know the chemical-biological essence of the processes occurring in the living body of a person at the molecular and cellular levels. To know the structure and properties of main classes of biologically important compounds, the main metabolic ways of their	Be able to apply the methods studied to solve professional problems. Be able to apply the accumulated knowledge about molecular biochemical processes for scientific research.	Process laboratory-chemical methods for studying the processes occurring in the body Possess biochemical methods of research in conditions of norm and pathology

			activators and inhibitors. Medical aspects of enzymology. Lipid composition of biological membranes. Structure and classification of lipids. Transmembrane transfer of substances, signal transmission into the cell. Fat-soluble vitamins. Participation in the formation of oral cavity tissues. Reactive oxygen species. Lipid peroxidation. Its role in norm and pathology. Energy exchange. Biological oxidation. Oxidative phosphorylation. Tricarboxylic acid cycle. Determination of succinate dehydrogenase activity. Structure, properties and functions of carbohydrates. Digestion of carbohydrates in the gastrointestinal tract. Anaerobic oxidation of glucose: glycolysis, stages, the concept of glycolytic oxidoreduction. Aerobic glycolysis: direct oxidation of glucose. Aerobic glycolysis: indirect oxidation of glucose. The pentose cycle and its biological significance. Regulation of blood glucose. Synthesis and mobilization of glycogen in the liver. Gluconeogenesis. Disorders of carbohydrate metabolism: diabetes mellitus. Glycogenoses. Digestion and absorption of lipids in the gastrointestinal tract: conditions, factors. Characteristics of the stages.		transformation, the role of cellmembranes, transport systems, in metabolisminthe human body. To know the general patterns of behavior and development of life,human anthropogenesis and ontogenesis, functional systems of the human body.		

			Metabolism of higher fatty acids: oxidation and biosynthesis. Ketone body metabolism: biosynthesis and catabolism. Determination of ketone bodies in urine. The exchange of simple and complex lipids: TAG and phospholipids. Cholesterol metabolism. Quantitative determination of cholesterol in blood serum. Transport forms of lipids. Pathology of lipid metabolism. Digestion of proteins in the gastrointestinal tract. Common pathways of amino acid catabolism: transamination. Clinical and diagnostic significance of determining the activity of transaminases in blood serum. Common pathways of amino acid catabolism: deamination, decarboxylation. The exchange of individual amino acids. Quantitative determination of urea in the blood. Ways of accumulation and neutralization of ammonia in the human body. Quantitative determination of urea in the blood. Exchange of nucleotides: purine and pyrimidine. Chromoprotein metabolism: biosynthesis and breakdown of hemoglobin in tissues. Iron exchange. Metabolic disorders of bile pigments. Jaundice. Violations of heme synthesis. Porphyria. Quantitative determination of direct bilirubin in blood serum. Introduction to endocrinology. Chemistry of				

			peptide hormones. Secondary messengers. Conducting a hormonal signal. Mechanism of cellular action of protein-peptide hormones, biological role. Steroid hormones: synthesis, mechanism of cellular action, biological role of glucocorticoids, mineralocorticoids, sex hormones. Biochemistry of the kidneys. The process of secondary urine formation. Physico-chemical properties of urine. Organic and inorganic composition of blood. Pathological components of urine. Regulation of water-salt metabolism. Biochemistry of non-mineralized connective tissue. Biochemistry of mineralized tissues. Bone remodeling. Regulation of the process. Features of the structure of macromolecules and metabolism of tooth tissues. Inorganic components of saliva and oral fluid The organic composition of saliva: proteins and enzymes. Organic substances of non-protein nature. Protective systems of the oral cavity. Gingival fluid. Plaque and the development of caries. Tartar and inflammation of periodontal tissues.				
2.	GPC-8	Ability to use basic physico-chemical, mathematical	Introductory lesson. Proteinogenic amino acids: structure, properties, classification. The role of oxy-amino acids in the formation of connective tissue proteins.	AI-1 GPC-8 Be able to use basicphysico-chemical,	To know the chemical-biological essence of	Be able to apply the methods studied to	Process laboratory-chemical methods

		and natural science concepts and methods in solving professional problems.	Chemistry of simple proteins, structural organization of a protein molecule. Physico-chemical properties of simple proteins. Chemistry of complex proteins: classification, representatives, characteristics of prosthetic groups. Glycoproteins, their role in the formation of bone and tooth tissue. Proteoglycans and glycosaminoglycans of oral cavity tissues. Structure and properties of collagen proteins of oral cavity tissues. Collagen, structure, biosynthesis. Structure and properties of noncollagen proteins of oral cavity tissues. Adhesive and anti-adhesive proteins. Structure and general properties of enzymes. The mechanism of enzymatic catalysis. Classification of enzymes. Vitamins as coenzymes. Water-soluble vitamins. Regulation of enzymes activity. Enzymes activators and inhibitors. Medical aspects of enzymology. Lipid composition of biological membranes. Structure and classification of lipids. Transmembrane transfer of substances, signal transmission into the cell. Fat-soluble vitamins. Participation in the formation of oral cavity tissues. Reactive oxygen species. Lipid peroxidation. Its role in norm and pathology. Energy exchange. Biological oxidation.	mathematical and natural science concepts and methods in solving professional problems.	the processes occurring in the living body of a person at the molecular and cellular levels.	solve professional problems	for studying the processes occurring in the body

			Oxidative phosphorylation. Tricarboxylic acid cycle. Determination of succinate dehydrogenase activity. Structure, properties and functions of carbohydrates. Digestion of carbohydrates in the gastrointestinal tract. Anaerobic oxidation of glucose: glycolysis, stages, the concept of glycolytic oxidoreduction. Aerobic glycolysis: direct oxidation of glucose. Aerobic glycolysis: indirect oxidation of glucose. The pentose cycle and its biological significance. Regulation of blood glucose. Synthesis and mobilization of glycogen in the liver. Gluconeogenesis. Disorders of carbohydrate metabolism: diabetes mellitus. Glycogenoses. Digestion and absorption of lipids in the gastrointestinal tract: conditions, factors. Characteristics of the stages. Metabolism of higher fatty acids: oxidation and biosynthesis. Ketone body metabolism: biosynthesis and catabolism. Determination of ketone bodies in urine. The exchange of simple and complex lipids: TAG and phospholipids. Cholesterol metabolism. Quantitative determination of cholesterol in blood serum. Transport forms of lipids. Pathology of lipid metabolism.				

			Digestion of proteins in the gastrointestinal tract. Common pathways of amino acid catabolism: transamination. Clinical and diagnostic significance of determining the activity of transaminases in blood serum. Common pathways of amino acid catabolism: deamination, decarboxylation. The exchange of individual amino acids. Quantitative determination of urea in the blood. Ways of accumulation and neutralization of ammonia in the human body. Quantitative determination of urea in the blood. Exchange of nucleotides: purine and pyrimidine. Chromoprotein metabolism: biosynthesis and breakdown of hemoglobin in tissues. Iron exchange. Metabolic disorders of bile pigments. Jaundice. Violations of heme synthesis. Porphyria. Quantitative determination of direct bilirubin in blood serum. Introduction to endocrinology. Chemistry of peptide hormones. Secondary messengers. Conducting a hormonal signal. Mechanism of cellular action of protein-peptide hormones, biological role. Steroid hormones: synthesis, mechanism of cellular action, biological role of glucocorticoids, mineralocorticoids, sex hormones. Biochemistry of the kidneys. The process of secondary urine formation. Physico-chemical properties of urine. Organic and inorganic				

			composition of blood. Pathological components of urine. Regulation of water-salt metabolism. Biochemistry of non-mineralized connective tissue. Biochemistry of mineralized tissues. Bone remodeling. Regulation of the process. Features of the structure of macromolecules and metabolism of tooth tissues. Inorganic components of saliva and oral fluid The organic composition of saliva: proteins and enzymes. Organic substances of non-protein nature. Protective systems of the oral cavity. Gingival fluid. Plaque and the development of caries. Tartar and inflammation of periodontal tissues.				
3.	GPC-9	Ability to assess morphofunctional, physiological conditions and pathological processes in the human body tosolve professional problems	Introductory lesson. Proteinogenic amino acids: structure, properties, classification. The role of oxy-amino acids in the formation of connective tissue proteins. Chemistry of simple proteins, structural organization of a protein molecule. Physico-chemical properties of simple proteins. Chemistry of complex proteins: classification, representatives, characteristics of prosthetic groups. Glycoproteins, their role in the formation of bone and tooth tissue. Proteoglycans and glycosaminoglycans of oral cavity tissues. Structure and properties of collagen proteins of oral cavity tissues. Collagen, structure,	AI-1GPC-9 Be able to determine morphofunctional,physiological states and pathological processesinthe human body.	To know the chemical-biological essence of the processes occurring in the living body of a person at the molecular and cellular levels.	Be able to apply the methods studied to solve professional problems	Process laboratory-chemical methods for studying the processes occurring in the body

			biosynthesis. Structure and properties of noncollagen proteins of oral cavity tissues. Adhesive and anti-adhesive proteins. Structure and general properties of enzymes. The mechanism of enzymatic catalysis. Classification of enzymes. Vitamins as coenzymes. Water-soluble vitamins. Regulation of enzymes activity. Enzymes activators and inhibitors. Medical aspects of enzymology. Lipid composition of biological membranes. Structure and classification of lipids. Transmembrane transfer of substances, signal transmission into the cell. Fat-soluble vitamins. Participation in the formation of oral cavity tissues. Reactive oxygen species. Lipid peroxidation. Its role in norm and pathology. Energy exchange. Biological oxidation. Oxidative phosphorylation. Tricarboxylic acid cycle. Determination of succinate dehydrogenase activity. Structure, properties and functions of carbohydrates. Digestion of carbohydrates in the gastrointestinal tract. Anaerobic oxidation of glucose: glycolysis, stages, the concept of glycolytic oxidoreduction. Aerobic glycolysis: direct oxidation of glucose. Aerobic glycolysis: indirect oxidation of				

			glucose. The pentose cycle and its biological significance. Regulation of blood glucose. Synthesis and mobilization of glycogen in the liver. Gluconeogenesis. Disorders of carbohydrate metabolism: diabetes mellitus. Glycogenoses. Digestion and absorption of lipids in the gastrointestinal tract: conditions, factors. Characteristics of the stages. Metabolism of higher fatty acids: oxidation and biosynthesis. Ketone body metabolism: biosynthesis and catabolism. Determination of ketone bodies in urine. The exchange of simple and complex lipids: TAG and phospholipids. Cholesterol metabolism. Quantitative determination of cholesterol in blood serum. Transport forms of lipids. Pathology of lipid metabolism. Digestion of proteins in the gastrointestinal tract. Common pathways of amino acid catabolism: transamination. Clinical and diagnostic significance of determining the activity of transaminases in blood serum. Common pathways of amino acid catabolism: deamination, decarboxylation. The exchange of individual amino acids. Quantitative determination of urea in the blood. Ways of accumulation and neutralization of ammonia in the human body. Quantitative				

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			enzymes. Organic substances of non-protein nature. Protective systems of the oral cavity. Gingival fluid. Plaque and the development of caries. Tartar and inflammation of periodontal tissues.				
4.	PC-1	Conducting a patient examination in order to establish a diagnosis	Introductory lesson. Proteinogenic amino acids: structure, properties, classification. The role of oxy-amino acids in the formation of connective tissue proteins. Chemistry of simple proteins, structural organization of a protein molecule. Physico-chemical properties of simple proteins. Chemistry of complex proteins: classification, representatives, characteristics of prosthetic groups. Glycoproteins, their role in the formation of bone and tooth tissue. Proteoglycans and glycosaminoglycans of oral cavity tissues. Structure and properties of collagen proteins of oral cavity tissues. Collagen, structure, biosynthesis. Structure and properties of noncollagen proteins of oral cavity tissues. Adhesive and anti-adhesive proteins. Structure and general properties of enzymes. The mechanism of enzymatic catalysis. Classification of enzymes. Vitamins as coenzymes. Water-soluble vitamins. Regulation of enzymes activity. Enzymes activators and inhibitors. Medical aspects of	AI-5 PC-1 Be able to substantiate the necessity andscope of laboratory research, interprets laboratory research data AI-15 PC-1 Be able tointerpret laboratory data	To know the chemical-biological essence of the processes occurring in the living body of a person at the molecular and cellular levels.	Be able to apply the methods studied to establish a diagnosis	Possess clinical and laboratory methods for studying the processes occurring in the body

			enzymology. Lipid composition of biological membranes. Structure and classification of lipids. Transmembrane transfer of substances, signal transmission into the cell. Fat-soluble vitamins. Participation in the formation of oral cavity tissues. Reactive oxygen species. Lipid peroxidation. Its role in norm and pathology. Energy exchange. Biological oxidation. Oxidative phosphorylation. Tricarboxylic acid cycle. Determination of succinate dehydrogenase activity. Structure, properties and functions of carbohydrates. Digestion of carbohydrates in the gastrointestinal tract. Anaerobic oxidation of glucose: glycolysis, stages, the concept of glycolytic oxidoreduction. Aerobic glycolysis: direct oxidation of glucose. Aerobic glycolysis: indirect oxidation of glucose. The pentose cycle and its biological significance. Regulation of blood glucose. Synthesis and mobilization of glycogen in the liver. Gluconeogenesis. Disorders of carbohydrate metabolism: diabetes mellitus. Glycogenoses. Digestion and absorption of lipids in the gastrointestinal tract: conditions, factors. Characteristics of the stages. Metabolism of higher fatty acids: oxidation and				

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			Conducting a hormonal signal. Mechanism of cellular action of protein-peptide hormones, biological role. Steroid hormones: synthesis, mechanism of cellular action, biological role of glucocorticoids, mineralocorticoids, sex hormones. Biochemistry of the kidneys. The process of secondary urine formation. Physico-chemical properties of urine. Organic and inorganic composition of blood. Pathological components of urine. Regulation of water-salt metabolism. Biochemistry of non-mineralized connective tissue. Biochemistry of mineralized tissues. Bone remodeling. Regulation of the process. Features of the structure of macromolecules and metabolism of tooth tissues. Inorganic components of saliva and oral fluid The organic composition of saliva: proteins and enzymes. Organic substances of non-protein nature. Protective systems of the oral cavity. Gingival fluid. Plaque and the development of caries. Tartar and inflammation of periodontal tissues.				
5.	UC-1	Ability to carry out a critical analysis of problem situations based	Introductory lesson. Proteinogenic amino acids: structure, properties, classification. The role of oxy-amino acids in the formation of connective tissue proteins. Chemistry of simple proteins, structural	AI-1 UC-1 Be able to identify problem situations and search for the	To know the system connections and relations between	Be able to identify problem situations and search	Own the methods of search, analysis and

		on a systematic approach, to develop a strategy for action	organization of a protein molecule. Physico-chemical properties of simple proteins. Chemistry of complex proteins: classification, representatives, characteristics of prosthetic groups. Glycoproteins, their role in the formation of bone and tooth tissue. Proteoglycans and glycosaminoglycans of oral cavity tissues. Structure and properties of collagen proteins of oral cavity tissues. Collagen, structure, biosynthesis. Structure and properties of noncollagen proteins of oral cavity tissues. Adhesive and anti-adhesive proteins. Structure and general properties of enzymes. The mechanism of enzymatic catalysis. Classification of enzymes. Vitamins as coenzymes. Water-soluble vitamins. Regulation of enzymes activity. Enzymes activators and inhibitors. Medical aspects of enzymology. Lipid composition of biological membranes. Structure and classification of lipids. Transmembrane transfer of substances, signal transmission into the cell. Fat-soluble vitamins. Participation in the formation of oral cavity tissues. Reactive oxygen species. Lipid peroxidation. Its role in norm and pathology. Energy exchange. Biological oxidation. Oxidative phosphorylation.	necessary information to solve problems in the professional field. AI-2 UC-1Be able to form value judgments in the professional field	phenomena, processes and objects of the world; - methods of information search, its systematic and critical analysis	for the necessary information to solve problems and form value judgments in the professional field	synthesis of information used for a systematic approach to solving tasks

			Tricarboxylic acid cycle. Determination of succinate dehydrogenase activity. Structure, properties and functions of carbohydrates. Digestion of carbohydrates in the gastrointestinal tract. Anaerobic oxidation of glucose: glycolysis, stages, the concept of glycolytic oxidoreduction. Aerobic glycolysis: direct oxidation of glucose. Aerobic glycolysis: indirect oxidation of glucose. The pentose cycle and its biological significance. Regulation of blood glucose. Synthesis and mobilization of glycogen in the liver. Gluconeogenesis. Disorders of carbohydrate metabolism: diabetes mellitus. Glycogenoses. Digestion and absorption of lipids in the gastrointestinal tract: conditions, factors. Characteristics of the stages. Metabolism of higher fatty acids: oxidation and biosynthesis. Ketone body metabolism: biosynthesis and catabolism. Determination of ketone bodies in urine. The exchange of simple and complex lipids: TAG and phospholipids. Cholesterol metabolism. Quantitative determination of cholesterol in blood serum. Transport forms of lipids. Pathology of lipid metabolism. Digestion of proteins in the gastrointestinal				

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			Pathological components of urine. Regulation of water-salt metabolism. Biochemistry of non-mineralized connective tissue. Biochemistry of mineralized tissues. Bone remodeling. Regulation of the process. Features of the structure of macromolecules and metabolism of tooth tissues. Inorganic components of saliva and oral fluid The organic composition of saliva: proteins and enzymes. Organic substances of non-protein nature. Protective systems of the oral cavity. Gingival fluid. Plaque and the development of caries. Tartar and inflammation of periodontal tissues.				

3. The place of discipline in the structure of the educational program

Discipline «"Biological chemistry-biochemistry of the oral cavity" », refers to the cycle of the mandatorypart of the Block 1 of Federal State Educational Standard of Higher Education on specialty 31.05.03Dentistry.

4. Scope of discipline

№	Type of work		Total credit units	Total hours	Semesters	
					II	III
					Hours	Hours
1	2		3	4	5	6
1	**Contact work of students with teacher (total), including:**		-	126	78	48
2	Lectures (L)		-	32	18	14
3	Practical exercises (PE)			94	60	34
4	Seminars (S)					
5	Laboratory work (LW)		-			
6	**Independent student work (ISW)**		-	54	30	24
7	**Type of intermediate attestation**	Set-off (S)				
		Exam (E)	-	36	-	36
8	**TOTAL:Total labor intensity**	**Hours**		216	108	108
		Accounting unit of labor intensity	6		3	3

5. The content of the discipline

№	№ semester	The name of the section	The types of academic work, including independent work of students (in hours)					Forms of current control of progress
			Lectures	LW	PW	SIW	Total	
1	2	Chemistry of simple and complex proteins	4		14	4	22	test control with the elements of visual identification, interview, situational tasks, written survey, module
2	2	Enzymes medical aspects of enzymology	4		6	2	12	test control with the elements of visual identification, interview, situational tasks, written survey, module
3	2	Vitamins and coenzymes			4	2	6	test, interview, situational tasks, written survey, examination

4	2	Lipids , structure, properties, classification. The structure and function of biological membranes.			2	4	6	The solution of situational tasks; test control with elements of visual identification, interview, situational tasks, written survey, module
5	2	Energy metabolism and the general ways of catabolism	4		8	6	18	The solution of situational tasks; test control with elements of visual identification, interview, situational tasks, written survey, module
6	2	The metabolism of carbohydrates.	4		14	6	24	the decision of situational problems, test control, module
7	2	Lipid metabolism.	2		12	6	20	The solution of situational tasks; test control with elements of visual identification, interview, situational tasks, written survey, module
8	3	Exchange of amino acids.	4		6	4	14	test control with the elements of visual identification, interview, situational tasks, written survey, examination
9	3	The exchange of nucleotides	2		2	4	8	The solution of situational tasks; test, written survey, examination
10	3	Metabolism of heme and iron metabolism.	2		2	2	6	The solution of situational tasks; test control with elements of visual identification, interview, situational tasks, written survey, module
11	3	Hormonal regulation of metabolism	2		4	4	10	The solution of situational tasks; test control with elements of visual identification, interview, situational tasks, written survey, examination, module
12	3	Bloodand urine biochemistry			2	2	4	the practical solution of situational tasks, the interview, situational tasks, written survey, examination, Module
13	3	Water and mineral			2	2	4	the practical solution of

		metabolism. The regulation of water-salt metabolism.						situational tasks, the interview, situational tasks, written survey, examination
14	3	Biochemistry of organs and tissues.			2		2	the practical solution of situational tasks, the interview, situational tasks, written survey, examination
15	3	Biochemistry of connective tissue	2		4		6	the practical solution of situational tasks, the interview, situational tasks, written survey, examination
16	3	Biochemistry of saliva	2		4	2	8	the practical solution of situational tasks, the interview, situational tasks, written survey, examination
17	3	Biochemistry of the tooth			6	4	10	the practical solution of situational tasks, the interview, situational tasks, written survey, examination
							+	**Final testing**
		Exam					36	
		TOTAL:	**32**		**94**	**54**	**216**	

6. The list of training and methodological support for independent work of students on discipline

№	№ of semester	The name of the educational-methodical development
1	2,3	Guide to laboratory classes in biological chemistry in the section "Lipid metabolism "for specialty 31.05.03 Dentistry
2	2,3	Methodological manual on biological chemistry on the topic of "Biochemistry of blood "for specialty 31.05.03 Dentistry
3	2,3	Methodological manual on biological chemistry on the topic of "Biochemistry of urine "for specialty 31.05.03 Dentistry
4	2,3	Methodological manual on biological chemistry on the topic of "Chromoproteins exchange. Clinical aspects of heme and bilirubin metabolism "for specialty 31.05.03 Dentistry
5	2,3	Methodological manual on biological chemistry on the topic of "Nucleoprotein exchange "for specialty 31.05.03 Dentistry
6	2,3	Methodological manual on biological chemistry on the topic of "Introduction to endocrinology.Chemistry of peptide and steroid hormones. Endocrinopathies "for specialty 31.05.03 Dentistry

7. Evaluation materials for conducting intermediate certification of trainees in discipline

№	The list of compe	№ of semester	Indicator(s) evaluation	Criterion(s) of assessment	Scale of evaluation	Name of FAT

	tencies					
1	2	3	4	5	6	7
1	GPC-5GPC-8 GPC-9 PC-1UC-1	2-3	see standard for evaluating the quality of education, approved by order of the FSBEI HE NOSMA of the Ministry of Healthcare of the Russian Federation on 10.07.2018, No.264/o	see standard for evaluating the quality of education, approved by order of the FSBEI HE NOSMA of the Ministry of Healthcare of the Russian Federation on 10.07.2018, No.264/o	see standard for evaluating the quality of education, approved by order of the FSBEI HE NOSMA of the Ministry of Healthcare of the Russian Federation on 10.07.2018, No.264/o	Examination fees to offset; The test task; Control tasks

8. The main list of textbooks required for the development of the discipline

№	Name	Author (s)	Year, place of publication	The number of instances	
				in library	on the department
1	2	3	4	5	6
Main literature					
1 2	Essentials of Medical Biochemistry With Clinical Cases Second edition	N.V. Bhagavan Chung-Eun Ha	Academic Press 2015	43	1
3 1	Clinical biochemistry: metabolic and clinical aspects Third edition	W.Marshall	Churchill livingtone Elsevier 2014	8	1
2	Medical biochemistry fourth edition	J.Baynes M. Dominiczak	Saunders Elsevier 2014	8	0
	Additional literature				
3	Elseviers integrated review biochemistry Second edition	Pelley J.	Elsevier saunders 2012	3	1

	Rapid review biochemistry Third edition	Pelley J. E. Goljan	Mosby Elsevier 2011	3	1
	Biochemistry Third edition	L. Davidson	Philadelphia: Harwal Publishing 1994	1	0

9. List of resources information and telecommunications network "Internet" necessary for the development of the discipline

1. Resources e-library SOGMA;
2. www.chemnet.ru,
3. www.chem.msu.su/rus/elibrary,
4. www.chemistry.narod.ru,
5. www.biblioclub.ru,
6. www.booksmed.com,
7. www.bio-x.ru/books-related

10. Methodical instructions for students for the development of the discipline

The training consists of contact work(126 hours) including lectures(32hours) and practical classes (94hours) and independent work (54 hours),also as control (36 hours) -intermediate certification in the form of an exam. The main training time is allocated for practical work on the development of biological chemistry-biochemistry of the oral cavity.

When studying biological chemistry- biochemistry of the oral cavity as a discipline, it is necessary to use the knowledge of biology, chemistry and physics and master the practical skills formed during practical classes in biological chemistry- biochemistry of the oral cavity.

Practical classes are conducted in the form of laboratory works, demonstrations of biochemical experiments and the use of visual aids, decision of situational tasks.

In accordance with the requirements of the FSES of HE in the educational process are widely used active and interactive forms of conducting classes (video, situation tasksand independent work of students). The proportion of lessons in interactive forms is not less than 30% of the classroom lessons.

11. The range of information technologies used in the implementation of the educational process in the discipline.

Microsoft Office
PowerPoint
Internet Explorer

12. Description of material-technical base necessary for realization of the educational process in the discipline

№	Name of the equipment	number	Technical condition
1	2	3	4
	Special equipment		
1.	Laboratory analytical scales	1	In working condition
2.	Water bath	4	In working condition

3.	GP-160 air sterilizer	1	In working condition
4.	GP-80 air sterilizer	1	In working condition
5.	Dispensers	3	good, need increased amount
6.	Interactive whiteboard	1	In working condition
7.	Sound-amplifying equipment (speakers)	2	In working condition
8.	Sets of slides and tables	1	Need replacement
9.	Biological microscopes	2	In working condition
10.	Multimedia installation	1	In working condition
11.	Multimedia projector	1	In working condition
12.	Mobile screen	1	In working condition
13.	PH meter FE 20-KIT with additional electrode	1	In working condition
14.	Automatic air sterilizer GP-160	1	In working condition
15.	Thematic set of illustrations for sections of the discipline	1	Requires updating
16.	Laser pointer	2	In working condition
17.	Photoelectrocolorimeter KFK-3km	2	In working condition
18.	Fridge	1	In working condition
19.	SM-6m centrifuge	5	In working condition
20.	Exhaust Cabinet LC-1500SHV	3	In working condition
21.	Exhaust Cabinet LC-1800SHV	1	In working condition
22.	Test tube stands	10	In working condition
23.	Electronic scale	1	In working condition
Officee quipment			
1.	Multifunctional device	2	In working condition
2.	Interactive whiteboard	1	In working condition
3.	The computer in gathering (the monitor and the system unit)	1	In working condition
4.	Monitor	3	In working condition
5.	Monoblock	2	In working condition
6.	Projector	2	In working condition
7.	Laptop	2	In working condition
8.	System blocks	2	In working condition
9.	Printer	1	In working condition

13. Conducting educational activities using e-learning and distance learning technologies

In the conditions of introduction of restrictive measures (quarantine) associated with an unfavorable epidemiological situation, the threat of the spread of a new coronavirus infection, and other force majeure events that do not allow conducting training sessions in person, it is

possible to study this discipline or part of it using e-learning and distance education technologies.

Teaching the discipline in the above situations will be carried out through the development of an electronic course with access to video lectures and interactive course materials: presentations, articles, additional materials, tests and various tasks. When conducting training sessions, current monitoring of academic performance, as well as intermediate certification of students, the academy's electronic information and educational environment platforms and/or other e-learning systems recommended for use in the academy, such as MOODLE, Zoom, Webinar, etc. can be used.

Lectures can be presented in the form of audio, video files, "live lectures", etc.

Seminars and practical classes can be held on-line in both synchronous and asynchronous modes. Seminars can be held in the form of web conferences.