

ЛД-16 ИН

«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

"Clinical biochemistry"

the main professional educational program of higher education-specialty program in the
specialty 31.05.01 General Medicine, approved on 24.05.2023

Form of education Full-time

The period of development 6

Department of Biological Chemistry

Vladikavkaz 2023

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

1. Federal State Educational Standard of Higher Education on specialty 31.05.01 General Medicine, approved by the Ministry of Education and Science of the Russian Federation on February 9, 2016 №95
2. Academic plan on specialty 31.05.01 General Medicine: ЛД-16-03-18 ИИ; ЛД-16-04-19 ИИ; ЛД-16-05-20 ИИ

approved by the Scientific Council of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation "24" May 2023, Protocol № 8

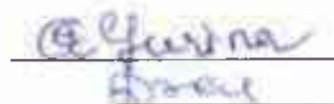
The educational training program of the discipline was approved at a meeting of the department of Biological Chemistry from "18" May 2023, Protocol № 10

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 State Medical University of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation from "24" May 2023, Protocol № 8

Developers:

Head of the department
Associate professor



A.E. Gurina
L.H. Dzotsieva

Reviewers:

Dzhioev I.G., head of the department of pathological physiology FSBEI HE NOSMA MOH Russia, doctor of medical sciences, professor.

Datieva F.S., director of the Institute of biomedical researches of Vladikavkaz scientific center, doctor of medical sciences.

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. Assessment 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	Contents of the discipline (or its sections)	Results of development		
			know	be able to	own
1	2	3	4	5	6
1.	GPC-7	Biochemical diagnosis of liver diseases. Hepatic syndromes. Differential diagnosis of jaundice.	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
2.	PC-21	Biochemical diagnosis of kidney diseases (pyelonephritis, glomerulonephritis, ARF, CRF, urolithiasis). Urinary syndromes. Clinical and diagnostic significance of determining the protein spectrum of blood in pathological conditions. Plasma enzymes, their clinical and diagnostic significance. Specific plasma proteins	Know the structure and properties of the main classes of biologically important compounds, the main metabolic pathways of their transformation, the role of cell membranes, transport systems in metabolism in the human body	Be able to apply the methods studied to solve professional problems	Process laboratory-chemical methods for studying the processes occurring in the body

3.	PC-22	The hemostasis system. Pathobiochemical mechanisms of development of hemostasis disorders. Coagulological syndromes.	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
4.	PC-7	Pathobiochemical mechanisms of carbohydrate metabolism disorders. Pathobiochemical mechanisms of lipid metabolism disorders.	To know the general laws of The development of life, anthropogenesis and ontogenesis of man, functional systems of the human body.	Be able to use physical, chemical and biological equipment	Possess basic information conversion technologies, text, tabular editors, web search

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

Discipline – Clinical biochemistry refers to the discipline of choosing of the variable part of the Block 1 of Federal State Educational Standard of Higher Education on specialty 31.05.01 General medicine. The discipline sets the following tasks:

1. To study biochemical methods of research at the cellular level, at the level of organs and tissues and the whole organism, the study of etiopathogenesis, features of the course of the disease.
2. To substantiate the biochemical mechanisms of disease prevention and treatment, biochemical methods of disease diagnosis and treatment effectiveness, features of the recovery and rehabilitation process

It is prior to the study of disciplines:

- clinical pathophysiology;
- clinical pharmacology;
- microbiology, virology;
- clinical laboratory diagnostics;
- clinical immunology;
- internal diseases;
- clinical disciplines.

4. Scope of discipline.

№	Type of work	Total credit units	Total hours	Semesters
				12 semester
				Hours
1	2	3	4	5
1	Contact work of students with teacher (total), including:	-	48	48
2	Lectures (L)	-	14	14
3	Practical exercises (PE)	-	34	34
4	Seminars (S)	-	-	-
5	Laboratory work (LW)	-	-	-
6	Independent student work (ISW)	-	24	24
7	Type of intermediate attestation	Set-off (S)	-	-
		Exam (E)	-	-
8	TOTAL: Total labor intensity	Hours	72	72
		Accounting unit of labor intensity	2	2

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	12	Biochemical diagnosis of liver diseases. Hepatic syndromes. Differential diagnosis of jaundice.	2		5	4	11	test control with visual identification elements, interview on situational tasks, written survey.
2	12	Biochemical diagnostics of kidney diseases. Urinary syndromes.	2		5	4	11	test control with visual identification elements, interview on situational tasks, written survey.
3	12	Clinical and diagnostic significance of changes in the protein spectrum of blood plasma and activity of enzyme systems in pathology. Determination of acute-phase proteins in connective tissue pathology and their clinical and diagnostic significance. (rheumatism, systemic lupus erythematosus, etc.)	2		5	4	11	test control with visual identification elements, interview on situational tasks, written survey.
4	12	Pathobiochemical foundations of the development and diagnosis of atherosclerosis. Biochemical diagnosis of myocardium infarction.	2		5	4	11	test control with visual identification elements, interview on situational tasks, written survey.
5	12	Pathobiochemical characteristics and diagnosis of diabetes mellitus and a conditions with impaired glucose homeostasis.	2		5	4	11	test control with visual identification elements, interview on situational tasks, written survey.
6	12	System hemostasis. Coagulological syndromes.	2		5	4	11	test control with visual identification elements, interview on situational

								tasks, written survey.
7	12	Iron metabolism. Biochemical mechanisms. Diagnosis of anemia.	2				2	test control with visual identification elements, interview on situational tasks, written survey.
8	12	Test			4		4	
		TOTAL:	14		34	24	72	

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	12	FEATURES OF BIOCHEMICAL AND PATHOLOGICAL PROCESSES IN THE LIVER (Textbook for students of the faculty of General Medicine).
2	12	BIOCHEMISTRY AND PATHOBIOCHEMISTRY OF THE KIDNEYS. URINARY SYNDROMES.(Educational and methodological recommendations for practical classes for students of the 6th year of the faculty of General Medicine .
3	12	CLINICAL AND DIAGNOSTIC SIGNIFICANCE OF THE DEFINITION OF PROTEIN FRACTIONS OF BLOOD. ELECTROPHORESIS.PROTEINOGRAMS ANALYSIS. (Educational and methodological recommendations for practical classes for students of the 6th year of the faculty of General Medicine.
4	12	DISORDERS OF CARBOHYDRATE METABOLISM. DIABETES MELLITUS.METABOLIC COMPLICATIONS IN DIABETES MELLITUS.(Educational and methodological recommendations for practical classes for students of the 6th year of the faculty of General Medicine.
5	12	DISORDERS OF LIPID METABOLISM.HYPERLIPOPROTEINEMIA, DYSLIPIDEMIA. (Educational and methodological recommendations for practical classes for students of the 6th year of the faculty of General Medicine .
6	12	HEMOSTASIS SYSTEM. COAGULOLOGICAL SYNDROMES. (Educational and methodological recommendations for practical classes for students of the 6th year of the faculty of General Medicine.

7. Assessment materials for intermediate evaluation of students in the discipline

№	The list of competencies	№ of semester	Indicator(s) of evaluation	Criterion(s) of assessment	Scale of evaluation	Name of AM
1	2	3	4	5	6	7
1	GPC-7,	12	see standard for	see standard for	see standard for	Examination

PC-21, PC-22, PC-7	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	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	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	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	Essentials of Medical Biochemistry With Clinical Cases Second edition	N.V. Bhagavan Chung-Eun Ha	Academic Press 2015	43	0
2	Clinical biochemistry: metabolic and clinical aspects Third edition	W.Marshall	Churchill livingtone Elsevier 2014	8	0
3	Medical biochemistry fourth edition	J.Baynes M. Dominiczak	Saunders Elsevier 2014	8	0
Additional literature					
1	Elseviers integrated review biochemistry Second edition	Pelley J.	Elsevier saunders 2012	3	0

2	Rapid review biochemistry Third edition	Pelley J. E. Goljan	Mosby Elsevier 2011	3	0
3	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

Training consists of classroom instruction, including lectures and practical classes. The main training time is allocated for practical work on the development of clinical biochemistry.

The study of clinical biochemistry as a discipline it is necessary to use knowledge of anatomy, histology and physiology.

Practical classes are conducted in the form of clinical laboratory works, that are providing on basis of ROD, demonstrations of biochemical indicators on automated analyzers, the use of visual AIDS, decision of situational tasks.

In accordance with the requirements of the FSES IN the educational process is widely used active and interactive forms of conducting classes (video, situation tasks, 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

Seme ster	Type of work PW,LW, SIW	Used educational technology (active, interactive)	The number of hours	% of classes in an interactive form	List of software
12	LW	A set of slides, movies to traditional lectures	14		Microsoft Office PowerPoint

					Internet Exploer
12	PW	A set of questions and tasks for practical tasks, a set of situational tasks for AP, the set of histories for the analysis of clinical cases.	34	30	Microsoft Office
12	SIW	Questions and tasks for independent work	24		Microsoft Office Internet Exploer

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 increase 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

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.