

ЛД-21 ИИ

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

“30” March 2022

EDUCATIONAL TRAINING PROGRAM OF DISCIPLINE

"Methods of modern express diagnostics"

the main professional educational program of higher education-specialty program in the
specialty 31.05.01 General Medicine, approved on 30.03.2022

Form of education Full-time

The period of development 6

Department of Biological Chemistry

Vladikavkaz 2022

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 in August 12, 2020 № 988
2. Academic plan on specialty 31.05.01 General Medicine (ЛД-21-01-21 ИИ, ЛД-21-02-22 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 from “30” March 2022, Protocol № 6

The educational training program of the discipline was approved at a meeting of the department of Biological chemistry from "14" March 2022, Protocol № 7

The educational training program of the discipline was approved at a meeting of the central coordinating training and methodological council from "22" March 2022, Protocol № 4

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 “30” March 2022, Protocol № 6

Developers:

Head of the department		A.E. Gurina
Associate professor of the department		A.B. Plieva
Assistant of the department		Z.A. Khetagurova

Reviewers:

Bolieva L.Z., head of the department, of Pharmacology with Clinical pharmacology FSBEI HE NOSMA MOH Russia, doctor of medical sciences, professor.

Ovsyannikova A.I., head of the clinical diagnostic laboratory of LLC "Clinical diagnostic laboratory
Dzagurov G.K., candidate of medical sciences

Content of the work program

1. the name of the discipline;
2. a list of the planned learning outcomes in the discipline, correlated with the planned results of mastering the educational program;
3. an 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 for contact work of students with a teacher (by type of training) and for independent work of students;
5. the content of the discipline, structured by topics (sections) with an indication of the number of academic or astronomical hours allocated for them and types of training;
6. a list of educational and methodological support for independent work of students in the discipline;
7. fund of assessment tools for intermediate certification of students in the discipline;
8. a list of basic and additional educational literature necessary for mastering the discipline;
9. a list of resources of the information and telecommunication network "Internet" (hereinafter referred to as the "Internet" network), necessary for mastering the discipline;
10. guidelines for students on the development of the discipline;
11. a list of information technologies used in the implementation of the educational process in the discipline, including a list of software and information reference systems (if necessary);
12. description of the material and technical base necessary for the implementation of the educational process in the discipline.
13. conducting educational activities using e-learning and distance learning technologies.

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

Competence number / index	Content of competence (or part of it)	Topic of the lesson (section)	Competence achievement indicators	Development results		
				know	be able to	own
2	3	4	5	6	7	8
UC - 1	Able to carry out a critical analysis of problem situations on the basis of a systematic approach, to develop an action strategy.	Organization of laboratory services. Quality control (QC) of laboratory research.	PC-1 UC-1 Identifies problem situations and searches for the necessary information to solve problems in the professional field. PC-2 UC-1 Forms value judgments in the professional field PC-3 UC-1 Conducts a critical analysis of information using the historical method PC-4 UC-1 Develops an action strategy for solving problems in the professional	1. Legislative, regulatory, instructive and methodological documents defining the activities of laboratories of medical organizations and quality management of clinical laboratory research 2. Clinical informativeness of laboratory research from the standpoint of evidence-based medicine in the most common diseases of the cardiovascular, respiratory,	1. To organize a workplace for morphological (cytological), biochemical, immunological, express methods and other studies; 2. Organize the work of nursing staff; 3. To organize the work of the laboratory personnel ; 4. Prepare a preparation for microscop	1. Skills for performing basic laboratory manipulations (microscopy, dosing, centrifugation, weighing, filtration of solutions, preparation of solutions of substances, etc.) 2. Preparation, fixation and staining of preparations for microscopic examination, preparation of samples for biochemical, immunological and other studies; 3. Carrying

			field	digestive, genitourinary, musculoskeletal, nervous, immune, endocrine systems and blood; 3. Basic modern preanalytical and analytical technologies of clinical laboratory research. 4. principles of operation and rules of operation of the main types of measuring instruments, analyzers and other equipment used in the performance of clinical laboratory research; 5. Factors influencing the results of laboratory research at the preanalytical, analytical and postanalytic	pic examination, samples of biomaterial for biochemical, immunological and other laboratory studies; 5. Prepare solutions of reagents, dyes for laboratory research; 6. Work on the most common laboratory measuring instruments, analyzers and equipment in accordance with the rules of their operation; 7. Carry out quality	out the calibration of laboratory measuring instruments; 4. Work on the most common laboratory measuring instruments, analyzers and equipment in accordance with the rules of their operation; 5. Execution of laboratory tests by non-device express methods; 6. Maintaining accounting and reporting documentation of the laboratory (registration of a journal for recording research results, filling out forms for analysis results,
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				al stages; 6. Technology for organizing and conducting internal and external quality control of clinical laboratory research.	control of the analytical stage of the research performed; 8. To organize the performance of laboratory research in accordance with the requirements for labor protection, sanitary and epidemiological requirements; 9. To carry out the most common express methods of laboratory research; 10. To issue accounting and reporting	etc.).
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					document ation for clinical laborator y research, provided for by the current regulator y document s.	
GPC-1.	Able to implement moral and legal standards, ethical and deontological principles in professional activities	Organiza tion of laborator y services. Quality control (QC) of laborator y research.	PC-1 GPC-1 1 Complies with moral and legal standards in professional activities.ИД-2 GPC-1 Expresses professional information in the process of intercultural interaction, observing the principles of ethics and deontology. ИД-1 GPC-2 2 Analyzes the awareness of the population about healthy lifestyles and medical literacy. PC-2 GPC-2 Develops a plan of organizationa l and	1.Legislativ e, normative- legal, instructional and methodolog ical documents defining the activities of laboratories of medical organization s and quality managemen t of clinical laboratory research 2. Clinical informative ness of laboratory studies from the standpoint of evidence- based medicine for the most common diseases of	1.Organiz e a workplac e for morpholo gical (cytologi cal), biochemi cal, immunol ogical, express methods and other studies; 2.Organiz e the work of nursing staff; 3.Organiz e the work of laborator y personnel ; 4.Prepare a preparati on for microsco	1.Skills in performing basic laboratory manipulatio ns (microscopy , dosing, centrifugati on, weighing, filtration of solutions, preparation of solutions of substances, etc.) 2.Preparatio n, fixation and staining of preparations for microscopic examination , preparation of samples for biochemical , immunologi cal and

			methodological measures aimed at raising the awareness of the population about a healthy lifestyle, its literacy in the prevention of infectious and non-infectious diseases in the adult population. PC-3 GPC-2 Develops an oral presentation or printed text that promotes healthy lifestyles and increases the literacy of the population in the prevention of disease. PC-1 GPC-3 Knows international anti-doping standards in sport	the cardiovascular, respiratory, digestive, genitourinary, musculoskeletal, nervous, immune, endocrine systems and blood; 3. Basic modern preanalytical and analytical technologies for clinical laboratory research. 4. operating principles and operating rules for the main types of measuring instruments, analyzers and other equipment used in clinical laboratory research; 5. Factors affecting the results of laboratory research at the preanalytical	pic examination, biomaterial samples for biochemical, immunological and other laboratory studies; 5. Prepare solutions of reagents, dyes for laboratory research; 6. Work on the most common laboratory measuring instruments, analyzers and equipment in accordance with the rules of their operation; 7. Conduct quality control of the	other studies; 3. Calibration of laboratory measuring instruments; 4. Works on the most common laboratory measuring instruments, analyzers and equipment in accordance with the rules of their operation; 5. Performing laboratory research using non-device express methods; 6. Maintaining accounting and reporting documentation of the laboratory (registration of a journal for recording research results, filling out forms for analysis
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				l, analytical and postanalytical stages; 6. Technology for organizing and conducting internal and external quality control of clinical laboratory research.	analytical stage of the research performed; 8.Organize the performance of laboratory research in accordance with the requirements for labor protection, sanitary and epidemic requirements; 9.Perform the most common express laboratory tests; 10.To issue accounting and reporting documentation for clinical laboratory studies, provided	results, etc.).
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					for by the current regulator y document s.	
GPC-4.	Able to use medical devices provided for by the procedure for the provision of medical care, as well as conduct examinations of the patient in order to establish a diagnosis	Hematological examinations Express methods in hematology. General clinical research methods Laboratory diagnostics of parasitic diseases. Clinical biochemistry. Methods of modern express diagnostics Coagulology. Immunological studies. ELISA research in the CDL. Methods of modern express diagnostics Molecular genetic research methods Cytological studies Bacteriological research methods	PC-1 GPC-4 Is able to draw up a plan of laboratory and instrumental diagnostics PC-2 GPC-4. Owns the algorithm for the clinical examination of the patient.	1. Diagnostic informativeness of laboratory symptoms and syndromes - the concept of specificity, test sensitivity, predictive value; list of laboratory methods, taking into account the organizational structure of healthcare institutions	1. Perform clinical laboratory tests and express methods aimed at identifying the risk of developing diseases; 2. Interpret the results of the most common laboratory diagnostic methods	1. Interpretation of laboratory test results; 2. Algorithm for a detailed clinical diagnosis; 3. Algorithm for making a preliminary diagnosis with subsequent referral to the appropriate specialist doctor.
GPC-5	Able to assess	Hematolog	PC-1 GPC-5 He is	1. Diagnostic	1. Perform clinical	1. Interpretin g the results

	morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems.	ical examinations Express methods in hematology. General clinical research methods Laboratory diagnostics of parasitic diseases. Clinical biochemistry. Methods of modern express diagnostics Coagulology. Immunological studies. ELISA research in the CDL. Methods of modern express diagnostics Molecular genetic research methods Cytological studies Bacteriological research methods	proficient in the algorithm of clinical, laboratory and functional diagnostics in solving professional problems. PC-2 GPC-5 Evaluates the results of clinical, laboratory and functional diagnostics in solving professional problems. PI-3 GPC-5 Determines morphofunctional, physiological states and pathological processes of the human body	informativeness of laboratory symptoms and syndromes - the concept of specificity, test sensitivity, predictive value; list of laboratory methods, taking into account the organizational structure of healthcare institutions	laboratory tests and express methods aimed at identifying the risk of developing diseases; 2. Interpret the results of the most common laboratory diagnostic methods	of laboratory tests; 2. Algorithm for a detailed clinical diagnosis; 3. Algorithm for making a preliminary diagnosis with subsequent referral to the appropriate specialist doctor.
GPC-10.	Able to understand the principles of modern information technologies and use	Organization of laboratory services. Quality control (QC) of laboratory	PI-1 GPC-1 Complies with moral and legal standards in professional activities. PI-2 GPC-1 Expresses	1. Legislative, regulatory, instructive and methodological documents defining the	1. To organize a workplace for morphological (cytological),	1. Skills for performing basic laboratory manipulations (microscopy, dosing, centrifugation)

	them to solve professional activities.	y research.	professional information in the process of intercultural interaction, observing the principles of ethics and deontology. PI-1 GPC-2 Analyzes the awareness of the population about healthy lifestyles and medical literacy. PI-2 GPC-2 Develops a plan of organizational and methodological measures aimed at raising the awareness of the population about a healthy lifestyle, its literacy in the prevention of infectious and non-infectious diseases in the adult population. PI-3 GPC-2 Develops an oral presentation	activities of laboratories of medical organizations and quality management of clinical laboratory research 2. Clinical informative ness of laboratory research from the standpoint of evidence-based medicine for the most common diseases of the cardiovascular, respiratory, digestive, genitourinary, musculoskeletal, nervous, immune, endocrine systems and blood; 3. Basic modern preanalytical and analytical technologies of clinical laboratory research.	biochemical, immunological, express methods and other studies; 2. Organize the work of nursing staff; 3. To organize the work of the laboratory personnel ; 4. Prepare a preparation for microscopic examination, samples of biomaterial for biochemical, immunological and other laboratory studies; 5. Prepare solutions of reagents,	on, weighing, filtration of solutions, preparation of solutions of substances, etc.) 2. Preparation, fixation and staining of preparations for microscopic examination , preparation of samples for biochemical , immunological and other studies; 3. Carrying out the calibration of laboratory measuring instruments; 4. Work on the most common laboratory measuring instruments, analyzers and equipment in accordance with the rules of
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			or printed text that promotes healthy lifestyles and increases the literacy of the population in the prevention of disease. PI-1 GPC-3 Knows international anti-doping standards in sport	4. principles of operation and rules of operation of the main types of measuring instruments, analyzers and other equipment used in the performance of clinical laboratory research; 5. Factors influencing the results of laboratory research at the preanalytical, analytical and postanalytical stages; 6. Technology for organizing and conducting internal and external quality control of clinical laboratory research.	dyes for laboratory research; 6. Work on the most common laboratory measuring instruments, analyzers and equipment in accordance with the rules of their operation ; 7. Carry out quality control of the analytical stage of the research performed; 8. To organize the performance of laboratory research in accordance with	their operation; 5. Execution of laboratory tests by non-device express methods; 6. Maintaining accounting and reporting documentation of the laboratory (registration of a journal for recording research results, filling out forms for analysis results, etc.).
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					the requirements for labor protection, sanitary and epidemiological requirements; 9. To carry out the most common express methods of laboratory research; 10. To issue accounting and reporting documentation for clinical laboratory research, provided for by the current regulatory documents.	
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PC-2	Examination of a patient to establish a diagnosis	Hematological research. General clinical research methods. Laboratory diagnosis of parasitic diseases. Clinical biochemistry. Methods of modern express diagnostics. Coagulology. Immunological studies ELISA studies in CDL. Methods of modern express diagnostics. Molecular genetic research methods Cytological studies Bacteriological research methods modern express diagnostics	PI-3 PC-2 Substantiates the need and scope of laboratory examination of the patient PI-6 PC-2 Analyzes the results of the patient's examination, if necessary, substantiates and plans the volume of additional studies. PI-8 PC-2 Interprets data obtained during laboratory examination of a patient.	1. Rules of primary health care as a type of health care in the health care system; 2. Methods for laboratory examination in the prevention of diseases, clinical examination of patients with chronic diseases, medical rehabilitation, monitoring the course of pregnancy; 3. Fundamentals of the organization and provision of emergency and urgent care, including the organization and provision of laboratory	1. Perform clinical laboratory studies and use methods - express diagnostics aimed at identifying the risk of developing diseases; 2. To carry out measures to prevent the spread of infectious and parasitic diseases, to comply with sanitary norms and rules when working	1. The technology for performing the most common types of general clinical, biochemical, coagulological, hematological, parasitological, immunological and cytological studies using laboratory equipment and information systems; 2. Technology for performing laboratory express research; 3.

				and diagnostic assistance; 4. Fundamentals of social hygiene and public health of the population of the country, the tasks of the country's health care in the field of health protection of the population and the prospects for the development of health care.	with biological material; 3. Conduct sanitary and educational work on the prevention of infectious and non-infectious diseases.	Technology for organizing and performing quality control of laboratory research; 4. Methods for drawing up a plan for laboratory examination of patients and interpreting the results of laboratory tests at the stages of prevention, diagnosis and treatment of the most common diseases of the cardiovascular, respiratory,
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						digestive, genitourinary, musculoskeletal, nervous, immune, endocrine systems, blood, as well as emergency states; 5. The technology of interaction with the staff of clinical departments on the issues of laboratory examination of patients.
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3. Place of discipline in the structure of the educational program
The discipline "Methods of modern express diagnostics" is a discipline of the part, formed by the participants of educational relations of the Block _1_ of the Federal State Educational Standard of Higher Education in the specialty _31.05.01 "General Medicine".

4. Scope of the discipline

№п/п	Type of work	Total credits	Total hours	Semester
				10
				Number of hours
1	2	3	4	5

1.	Contact work of students with the teacher (total), including:		2	72	72
1.	Lectures (L)		-	14	14
2.	Clinical Practices (CL)		-	58	58
3.	Seminars (S)		-		-
4.	Laboratory work (LW)		-	-	-
5.	Student independent work (SIW)		1	36	36
6.	Intermediate type appraisals	offset(O)			offset
		exam (E)			
7.	TOTAL: General labor intensity	hours		108	108
		3ET	3		3

5. Content of the discipline

№/П	№ semester	The name of the topic (section) of the discipline	Types of educational activities (in hours)					Forms of monitoring of progress
			L	LW	S	SIW	Total	
1	2	3	4	5	6	7	8	9
1	10	Organization of laboratory services. Quality control (QC) of laboratory research.	2		7	4	13	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks, module
2	10	Hematological examinations. Express methods in hematology.	2		5	2	9	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks, module

3.	10	General clinical research methods. Laboratory diagnostics of parasitic diseases.	2		20	10	32	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks, module
4.	10	Clinical biochemistry. Methods of modern express diagnostics.	2		10	8	20	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks
5.	10	Coagulology Methods of modern express diagnostics.	2		3	2	7	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks
6.	10	Immunological studies. ELISA research in the CDL. Methods of modern express diagnostics.	2		5	4	11	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks

7.	10	Molecular genetic research methods. Cytological studies. Bacteriological research	2		8	6	16	Solving situational tasks; test control with elements of visual identification, written survey, interview on situational tasks
		TOTAL:	14		58	36	108	

6. The list of educational and methodological support for independent work of students in the discipline

№/п	№ семестра	Наименование учебно-методической разработки
1.	10	1. Клиническая лабораторная диагностика. Национальное руководство. В.В. Долгов, В.В. Меньшиков. Том I. Москва. 2013 2. Гематологические анализаторы. Интерпретация анализа крови. Методические рекомендации. С. А. Луговская, М.Е. Почтарь, В.В. Долгов. Москва. 2008 3. Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Бу, DABCC, FACB. Москва. 2013
2.	10	1. Клиническая лабораторная диагностика. Национальное руководство. В.В. Долгов, В.В. Меньшиков. Том I, II. Москва. 2013 2. Гематологические анализаторы. Интерпретация анализа крови. Методические рекомендации. С. А. Луговская, М.Е. Почтарь, В.В. Долгов. Москва. 2008. 3. Лабораторная гематология. 3. Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Бу, DABCC, FACB. Москва. 2013
3.	10	1 . Клиническая лабораторная диагностика. Национальное руководство. В.В. Долгов, В.В. Меньшиков. Том I, II. Москва. 2013 2. Спинномозговая жидкость, лабораторные методы исследования и их

		клинико-диагностическое значение. Учебное пособие. С.Г. Марданлы, Ю.В. Первушин, В.Н. Иванова. г. Электрогорск, 2012. 3. Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Ву, DABCC, FACB. Москва. 2013.
4.	10	1.Пособие по биохимическим исследованиям в клинико-диагностических лабораториях.. Ю.В. Первушин, С.Ш. Рогова. Ставрополь, 2008. 2. Клиническая лабораторная диагностика. Национальное руководство. В.В. Долгов, В.В. Меньшиков. Том I. Москва. 2013 3. Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Ву, DABCC, FACB. Москва. 2013
5.	10	1. Лабораторная диагностика нарушений системы гемостаза. Учебное пособие. И.А. Волкова. Москва. 2013 1. Лабораторная диагностика неотложных состояний. А.А. Кишкун. Москва. 2012. 2. Клиническая лабораторная диагностика.Национальное руководство. В.В. Долгов, В.В. Меньшиков.Том I. Москва. 2013. 3. Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Ву, DABCC, FACB. Москва. 2013.
6.	10	1 . Клиническая лабораторная диагностика. Национальное руководство. В.В. Долгов, В.В. Меньшиков. Том I, II. Москва. 2013. 2.Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Ву, DABCC, FACB. Москва. 2013. 3. Иммунологические исследования и методы диагностики инфекционных заболеваний в клинической практике. А.А. Кишкун. Москва, 2009.
7.	10	1 . Клиническая лабораторная диагностика. Национальное руководство. В.В. Долгов, В.В. Меньшиков. Том I, II. Москва. 2013. 2. Клиническое руководство Тица по лабораторным тестам. Алан Г.Б.Ву, DABCC, FACB. Москва. 2013. 3. ПЦР в реальном времени. Д.В. Ребрикова. Москва, 2015.

7. Fund of assessment tools for intermediate certification of students in the discipline

№/п	List of competencies	№ semester	Indicator (s) evaluating	Evaluation criterion (s)	Grading scale	Name FES
1	2	3	4	5	6	7
1.	UC-1 GPC-1 GPC-4 GPC-5 GPC-10 PC-2	10	see the standard for assessing the quality of education, approved. By order of the Federal State Budgetary Educational Institution of Higher Education of the SOGMA of the Ministry of Health of Russia dated 10.07.2018, No. 264 / o	see the standard for assessing the quality of education, approved. By order of the Federal State Budgetary Educational Institution of Higher Education of the SOGMA of the Ministry of Health of Russia from 10.07.2018 № 264 / o	see the standard for assessing the quality of education, approved. By order of the Federal State Budgetary Educational Institution of Higher Education of the SOGMA of the Ministry of Health of Russia from 10.07.2018 No. 264 / o	Test control. Situational task interview. Tickets for offset

8. Перечень основной и дополнительной учебной литературы, необходимой для освоения дисциплины

п/№	Наименование	Автор (ы)	Год, место издания	Кол-во экземпляров	
				в биб-лиотеке	на кафедре
1	2	3	4	5	6
Основная литература					

6.	Руководство по лабораторным методам диагностики	ред. А.А. Кишкун	М. : ГЭОТАР-Медиа, 2007	12	
7.	Клиническая биохимия: учеб. пособие	ред. В. А. Ткачук	М. : ГЭОТАР-Медиа, 2006	106	
				«Консультант студента» http://www.studmedlib.ru/book/ISBN9785970407332.html	
8.	Клиническая лабораторная диагностика : учеб. пособие	Кишкун А. А.	М. : ГЭОТАР-Медиа, 2013 2015	10 2	
				«Консультант студента» http://www.studmedlib.ru/book/ISBN9785970435182.html	

Дополнительная литература

1.	Клиническая лабораторная диагностика: справочник для врачей	Медведев В. В. Волчек Ю. З.	СПб. : Гиппократ, 1997	1	
1.	Справочник по клинико-биохимической лабораторной диагностике в 2 т.	Камышников В. С.	Минск : Беларусь, 2000	T.1-2 T.2-2	
2.	Терапевтический справочник Вашингтонского университета	ред. Ч. Кэри	М. : Практика, 2000	2	
3.	Клинико-лабораторная диагностика инфекционных болезней: Рук-во для врачей	ред. Ю. В. Лобзин	СПб. : Фолиант, 2001	21	

4.	Биохимические методы исследования в клинко-диагностических лабораториях : учеб. пособие	О.А. Тимин и др.	Томск : STT, 2002	1	
6.	Лабораторно-клиническая диагностика сахарного диабета и его осложнений	Бондарь Т. П. Козинец Г. И.	М. : МИА, 2003	3	
7.	Погорелов, В. М. Лабораторно-клиническая диагностика анемий	Погорелов В. М. Козинец Г. И. Ковалева Л. Г.	М. : МИА, 2004	1	
8.	Таранов, А. Г. Лабораторная диагностика в акушерстве и гинекологии: Справочник	Таранов А. Г.	М. : ЭликсКом, 2004	1	
9.	Российский терапевтический справочник (с приложениям и на компакт-диске)	ред. А. Г. Чучалин	М. : ГЭОТАР-Медиа, 2005	5	
10.	Внутренние болезни. Лабораторная и инструментальная диагностика : учеб. пособие	Ройтберг Г. Е. Струтынский А. В.	М. : МЕДпресс-информ, 2011	2	

11.	Клиническая микробиология : руководство для специалистов клинической лабораторной диагностики	Донецкая Э. Г.-А.	М. : ГЭОТАР-Медиа, 2011	1	
12.	Клиническая лабораторная диагностика: национальное руководство: в 2 т. Т.1	ред. В. В. Долгов	М. : ГЭОТАР-Медиа, 2012	1	
13.	Медицинская лабораторная диагностика: программы и алгоритмы : руководство для врачей	ред. А. И. Карпищенко	М. : ГЭОТАР-Медиа, 2014	1	
14.	Методы клинических лабораторных исследований	ред. В. С. Камышников	М. : МЕДпресс-информ, 2015 2016	1 2	
15.	Биохимический диагноз (физиологическая роль и диагностическое значение биохимических компонентов крови и мочи)	Бородин Е. А. Бородина Г. П.	Благовещенск, 2010	1	
16	Клинический анализ лабораторных исследований в практике военного врача	Капитаненко А. М. Дочкин И. И.	М. : Воениздат , 1985	1	

17.	Лабораторные методы исследования в клинике : справочник	ред. В. В. Меньшиков	М. : Медицина , 1987	10	
18.	Руководство к практическим занятиям по клинической лабораторной диагностике	ред. М.А. Базарнова	Киев : Выща шк., 1988	18	
19.	Руководство к практическим занятиям по методам клинических лабораторных исследований : Учеб. пособие	Ронин В. С. Старобинец Г. М.	М. : Медицина , 1989	3	
20.	Гематологический атлас	Абрамов М. Г.	М. : Медицина , 1979, 1985	15	
21.	Пособие по клинической биохимии для системы послевузовского профессионального образования : учеб. пособие	Никулин Б. А.	М. : ГЭОТАР-Медиа, 2007	7	«Консультант студента» http://www.studmedlib.ru/book/ISBN9785970403587.html



9. The list of resources of the information and telecommunications network "Internet" necessary for mastering the discipline

Hematology

<http://dic.academic.ru/>

Biochemistry

<http://biokhimija.ru/klinicheskajabiohimija.html>

[http://bono-esse.ru/blizzard/Lab/KAK/analizator metod recomend 2.html](http://bono-esse.ru/blizzard/Lab/KAK/analizator_metod_recomend_2.html)

<http://www.proflit.ru/journals/172/>

Immunology

[http://6years.net/index.php?do=static&page=immunologija allergologija](http://6years.net/index.php?do=static&page=immunologija_allergologija)

<http://medstudents.ru/category/immunology/immtextbooks/>

<http://an.yandex.ru/count/>

www.ncbi.nlm.nih.gov.

www.qiagtn.com.

<http://www.bestpravo.ru/sssr/eh-postanovlenija/z1r.htm>

<http://medlib.tomsk.ru/node/>

Quality control in KDL

www.fsvok.ru

10. Methodical instructions for students on mastering the discipline

Training in the discipline "Clinical laboratory diagnostics" consists of contact work (72 hours), including a lecture course (14 hours) and practical classes (58 hours) and independent work (36 hours). The main study time is devoted to the practical part of the study of this discipline. The practical activity of a doctor of any specialty is associated with the need for information about the state of the vital processes of individual organs and tissues, as well as the patient's body as a whole. The subject of laboratory medicine is the receipt and provision for clinical use of information about the composition (chemical and cellular) of biomaterials and changes that are evidence-based causal relationships with certain pathological processes and conditions in the human body.

To study the discipline "Clinical laboratory diagnostics" you need knowledge, skills and abilities formed by previous disciplines, such as biology, chemistry, biological chemistry, normal physiology, histology, microbiology, virology, immunology.

Practical classes are conducted on the basis of the clinical diagnostic laboratory of the SOGMA Clinical Hospital, which contributes to a better understanding of all stages of the laboratory's work: preanalytical - including the collection of biological material; for the analytical one - a demonstration of the actually working automated analyzers, which makes it possible to visually evaluate the obtained laboratory tests and understand the quality control issues carried out by the laboratory; postanalytic - the interpretation of research results and the formation, ultimately, of clinical laboratory thinking.

The ability to conduct practical classes in an existing laboratory, the use of visual aids, solving situational problems, independent work with laboratory research ultimately strengthens the theoretical course in mastering the discipline. In accordance with the requirements of the Federal State Educational Standard of Higher Education, active and interactive forms of conducting classes are widely used in the educational process (situational tasks, independent extracurricular work, developing learning in the form of role-playing games, informatization training, individual work with laboratory research and the interpretation of research results). The proportion of classes conducted in interactive forms is at least 5% of classroom lessons.

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

Educational technologies used in the study of this discipline at least 5% interactive lessons on the volume of classroom lessons.

Examples of interactive forms and methods of conducting classes:

- **imitation technologies:** role-playing games ("Methods of express diagnostics in a clinical laboratory. The work of a KDL doctor when performing express studies"), training ("Interpretation of the results of a biochemical analysis study in case of lipid metabolism disorders");

- **non-imitation technologies:** lecture (problematic - "Differential diagnosis of iron deficiency anemia and anemia of chronic diseases"), discussion ("The role and functions of cells of the phagocytic system").

The use of a clinical diagnostic laboratory, laboratory and instrumental equipment, classrooms for the work of students.

Multimedia complex (laptop, projector, screen), TV, slidescope, VCR, PC, monitors. Sets of slides, tables / multimedia visual materials for various sections of the discipline. Situational tasks, test tasks on the topics studied. Boards.

12. Description of the material and technical base necessary for the implementation of the educational process in the discipline

№ п/п	Equipment identification	Quantity	Technical condition
1	2	3	4
Special equipment			
1.	Automatic biochemistry analyzer CA-400 Furuno	1	
1.	Automatic biochemistry analyzer CA-270 Furuno	1	
2.	Semi-automatic biochemistry analyzer	1	

	«Clima» MC-15		
3.	Automatic system "Alisei" for enzyme immunoassay on microbeds	1	
4.	Hematology analyzer «Medonic»	2	
5.	Binocular microscope "Mictron"	1	
6.	Immunoassay analyzer Access 2	1	
7.	Sysmex® CA-600 automatic blood coagulation analyzers	1	
8.	Medical four-channel blood clotting analyzer "KoaTest-4"	1	
9.	Express-analyzer immunochromatographic EasyReader +	1	
10.	Urine analyzer DIRUI H-100	1	
11.	Gas and electrolyte analyzer GEMPremier 3000	1	
12.	Biochemical test strip analyzer NanoCheker	1	
13.	Stopwatch	1	
14.	Dispenser automatic portable medical "Lenpipet",	5	
15.	Auxiliary equipment		
16.	Sterilizer	1	
17.	Laboratory counter C5	1	
18.	Drying cabinet	1	
19.	Metal hood LK 900SHV-MET	1	
20.	Goryaeva camera	4	
21.	Fuchs-Rosenthal camera	1	
22.	Distiller	2	
23.	Refrigerator	4	
24.	Centrifuge	5	
25.	Drying cabinet Test tube racks	1	
26.	Test tube racks	20	
27.	Biological microscope	1	
28.	Glassware		
29.	Test tubes	300	
30.	Centrifuge tubes with division	100	
31.	Flasks 250 ml	15	
32.	Flasks 500 ml	15	
33.	Pipettes	100	
34.	Mortars	20	
35.	Spirit lamps	20	
36.	Petri dishes	320	
37.	Flasks with ground stoppers (125-1000 ml)	80	
38.	Flasks 30 ml	100	

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

In the context of the 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 full-time training, it is possible to study this discipline or part of it using e-learning and distance educational 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, monitoring progress, as well as intermediate certification of students, platforms of the electronic information and educational environment of the academy 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. Conducting seminars and practical classes is possible in on-line mode both in synchronous and asynchronous modes. Seminars can be held in the form of web conferences.