ЛД-21 ИН

Federal State Budgetary Educational Institution of Higher Education "North-Ossetian State Medical Academy" of the Ministry of Healthcare of the Russian Federation



EDUCATIONAL TRAINING PROGRAM OF THE DISCIPLINE

«Medical genetics»

the main professional educational program of higher education – specialty program in the specialty 31.05.01 General Medicine, approved in May 24, 2023

Form of study	Full-time	
The period of development	6	_

Department of Surgical Pediatric Diseases with Medical Genetics

Vladikavkaz, 2023

When developing the work program of the discipline, the basis is based on:

- 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 August 12, 2020 № 988
- 2. Academic plan on specialty 31.05.01 General Medicine (ЛД-21-01-21ИН, ЛД-21-02-22ИН, ЛД-21-03-23ИН), 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 Surgical Pediatric Diseases with Medical Genetics «11» May 2023, protocol № 10.

The educational training program of the discipline was approved at the meeting of the Central Coordinating Educational and Methodological Council of May 23, 2023, Minutes No. 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.

Developer:

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- 1. Name of discipline;
- 2. List of planned results of training in discipline, related to the planned results of the educational program;
- 3. Specifying the place of 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 the contact work of students with the teacher (by types of training classes) and for the independent work of students;
- 5. Discipline content structured by subject (s), indicating the number of academic or astronomical hours allocated to them and the types of training sessions;
- 6. List of educational and methodological support for independent work of students in discipline;
- 7. An evaluation fund for intermediate certification of students in the discipline;
- 8. List of basic and additional educational literature necessary for the study of discipline;
- 9. List of resources of the Internet information and telecommunication network (hereinafter referred to as the Internet) required for discipline training;
- 10. Methodological instructions for students in discipline development;
- 11. A list of information technologies used in the discipline education process, including a list of software and information reference systems (if necessary);
- 12. Description of the material and technical basis necessary for the discipline education process.
- 13. Conducting educational activities using e-learning and distance learning technologies

1. Name of discipline: Medical genetics

2. List of planned results of training in discipline, related to the planned results of the educational program;

No	Compete	Content of		Competence achievement		Development results	
№ п/п	nce number / index	competence	Lesson topic	indicators	know	be able to	to own
1	2		3		4	5	6
1.	УК-1	Capable realize critical analysis problem situa- tions on basis systemic approach to develop strategy of action	Introduction to the course of medical genetics.	ИД-1 УК-1. Identifies problem situations and searches for the necessary infor- mation to solve problems in the professional field.	Modern concepts of the human genome, karyotype, mecha- nisms of maintain- ing the constancy of the karyotype in a number of genera- tions of cells and organisms	Collect anamnesis and genealogical information, draw up a pedigree, ana- lyze the inheritance of a disease or trait in the fam- ily.	Skills of hereditary pathology propae- deutics. Compila- tion of the patient's pedigree.
2.	ОПК -1	Able to implement moral and legal norms, ethical and deontolog- ical principles in pro- fessional activities		ИД-1 ОПК-1. Knows how to observe moral and legal founda- tions in a professional activities. ИД-2 ОПК-1 Knows how com- petently and accessible present professional information, ob- serving the principles of bioeth- ics and deontology	 Moral and ethical norms, rules and principles of professional medical behavior, ethical foundations of a modern doctor; Basic ethical documents of domestic and international professional associations and organizations 	 Apply basic legal norms; Communicate with patients, their parents, medical personnel in accordance with the rules of medical ethics and medical deontolo- gy 	Moral and ethical argumentation;
3.	ОПК -2	Able to carry out and		ИД-1 ОПК-2 Knows how to	Possesses prepara-	. Assess genetic risk, cal-	Assess genetic risk,

		monitor the effective- ness of preventive measures, the for- mation of a healthy lifestyle and sanitary and hygienic education of the population		analyze public awareness of healthy lifestyle and health lit- eracy. ИД-2 ОПК-2 Possesses prepa- ration skills oral presentation or printed text, promoting a healthy lifestyle, increasing lit- eracy of the population in health culture and prevention.	tion skills oral presentation or printed text, pro- moting a healthy lifestyle, increasing literacy of the population in health culture and preven- tion.	culate the risk of having a sick child in a family with a burdened hereditary his- tory	calculate the risk of having a sick child in a family with a burdened hereditary history.
4.	УК-1	Capable realize critical analysis problem situa- tions on basis systemic approach to develop strategy of action	Gene dis- eases and syndromes, features of the clinical picture, methods of diagnosis, prevention and treat-	ИД-1 УК-1. Is able to search and interpret information on profes- sional scientific problems ИД-2 УК-1. Knows how to iden- tify problem situations ИД-3 УК-1. Knows how to ap- ply a systematic approach to solving problems in the profes- sional field	Modern concepts of the human genome, mechanisms of maintaining the constancy of the karyotype in a number of genera- tions of cells and organisms.	Collect a complete histo- ry of the patient, interpret the examination results, make a preliminary diag- nosis, outline the amount of additional studies	Medical and biolog- ical terminology and use it deliber- ately in professional communication.
5.	ОПК -1	Able to implement moral and legal norms, ethical and deontolog- ical principles in pro- fessional activities	ment.	ИД-1 ОПК-1. Knows how to observe moral and legal founda- tions in a professional activities. ИД-2 ОПК-1. Knows how com- petently and accessible present professional information in accordance with the principles of bioethics and deontology.	 Mechanisms of mutation, their classification, medical and evolutionary significance of mutations. Moral and ethical norms, rules and principles of professional medical behavior, ethical foundations of a modern doctor; Moral and ethical norms, rules and principles of professional medical behavior, ethical foundations of a modern doctor; Moral and ethical norms, rules and principles of professional medical behavior, ethical foundations of a modern doctor; 	 Apply basic legal norms; Communicate with patients, their parents, medical personnel in accordance with the rules of medical ethics and medical deontolo- gy 	Moral and ethical argumentation;

			I		a i i i i i		1
					fessional medical behavior, the rights		
					of the patient and		
					the doctor:		
					Basic ethical		
					documents of do-		
					mestic and interna-		
					tional professional-		
					zations		
6.	ОПК -5	Able to assess mor-		ИД-1 ОПК-5. He is proficient	•Terminology used	• Collect a hereditary	• Skills of clinical
		phofunctional, physio-		in the algorithm of clinical, la-	to describe the	history;	examination of
		logical conditions and		boratory and functional diagnos-	phenotypic char-	• Determine the status of	children of different
		pathological processes		tics in solving professional	acteristics of the	the patient;	ages (visual exami-
		in the human body to		problems.	patient	• Describe the patient's	nation, palpation,
		solve professional		ИД-2 ОПК-5. Evaluates the re-	•Semiotics of organ	phenotype;	percussion, auscul-
		problems		sults of clinical, laboratory and	and system dam-	• Assess the possibility of	tation).
				functional diagnostics in solving	age in children;	a patient having one or	• The method of
				professional problems.	•Scope of DNA-	another hereditary pa-	comparing the clin-
				ИД-3 ОПК-5. Determines mor-	methods	thology;	ical picture and the
				phofunctional, physiological	•Laboratory and	• Interpret data from la-	results of laboratory
				states and pathological process-	instrumental diag-	boratory and instrumen-	and instrumental
				es of the human body	nostic methods;	tal studies;	research
						• Conduct a syndromo-	Own the methodol-
						logical analysis of the	ogy for conducting
						data obtained	syndromological
7		A 1, 1,	-		. D		analysis;
/.	OTIK -/	Able to prescribe		ИД-1 OIIK-/ Conducts effec-	• Basic methods of	• Collect and statistically	• Algorithm of
		treatment and monitor		tive, safe therapy based on clini-	collecting and pro-	analyze medical in-	statistical
		its effectiveness and		cal guidelines of the Ministry of	cessing statistical	formation and interpret	research
0			Т	Health of Russia		the results	
ð.	11K-2	Examination of the		ид-1 ПК-2 Collects complaints,	Kesearch planning	• Use various infor-	• Methods of
		tablish a diagnosis	a a	the notions and analyzes the in	principies	mation and educa-	searching for
		laonsn a diagnosis	t.	formation received		tional technologies to	medical infor-
			I	$U = 2 \Pi V = 2 Conducts a commission$		improve your profes-	mation using the
			l l	hysical examination of the main		sional level;	Indrary fund and
1			l l	mysical examination of the pa-		• Organize a self-	internet re-

				tient (examination, palpation,		learning process.	sources
				percussion, auscultation) and in-		• Conduct an analysis	• Algorithm and
				terprets its results.		of scientific literature	methods of sci-
				ИД-3 ПК-2 Substantiates the ne-		and the results of sci-	entific and prac-
				cessity and scope of laboratory		entific research, eval-	tical research
				examination of the patient.		uate the level of evi-	
				ИД-4 ПК-2 Обосновывает		dence of the data ob-	
				необходимость и объем ин-		tained	
				струментального обследования			
				пациента.			
				ИД-5 ПК-2 Substantiates the			
				need to refer the patient for con-			
				sultations to specialist doctors.			
				ИД-6 ПК-2 Analyzes the results			
				of the patient's examination, if			
				necessary, justifies and plans the			
				volume of additional studies			
				ИД-7 ПК-2 Interprets the results			
				of collecting information about			
				the patient's illness.			
				ИД -8 ПК -2 Interprets the data			
				obtained during laboratory exam-			
				ination of the patient.			
				ИД -9 ПК -2 Interprets the data			
				obtained during the instrumental			
				examination of the patient.			
				ИД -10 ПК -2 Interprets the data			
				obtained in consultation with the			
				patient by specialist doctors.			
				ИД -12 ПК -2 Carries out differ-			
				ential diagnosis of diseases of			
				internal organs from other dis-			
				eases			
10	УК-1	Capable realize critical	Chromoso-	ИД-1 УК -1. Knows how to	Features of clinical	Formulate a presumptive	Family history
		analysis problem situa-	mal diseases	search and interpret information	manifestations of	diagnosis of chromoso-	collection skills.
		tions on basis systemic	and syn-	on professional scientific issues	hereditary patholo-	mal pathology and some	

		approach, develop strategy of action	dromes, pe- culiarities of the clinical picture, methods of diagnosis, prevention and treat- ment.	ИД-2 УК -1. Knows how to identify problem situations ИД-3 УК -1. Knows how to ap- ply a systematic approach to solving problems in the profes- sional field ИД-4 УК -1 Interprets the results of collecting information about the patient's illness.	gy, general princi- ples of clinical di- agnosis of chromo- somal diseases, causes of origin and diagnostic signifi- cance of morpho- genetic variants	of the most common monogenic diseases, de- termine the need for addi- tional examination, in- cluding specific genetic methods	
11	ОПК -1	Able to implement moral and legal norms, ethical and deontolog- ical principles in pro- fessional activities		ИД -1 ОПК -1. Knows how to observe moral and legal founda- tions in a professional activities. ИД -2 ОПК -1. Knows how competently and accessible present professional information in accordance with the principles of bioethics and deontology.	 Moral and ethi- cal norms, rules and principles of professional medical behav- ior, ethical foun- dations of a modern doctor; Basic ethical documents of domestic and in- ternational pro- fessional associa- tions and organi- zations 	 Apply basic legal norms; Communicate with patients, their parents, medical personnel in accordance with the rules of medical ethics and medical deontolo- gy 	Moral and ethical argumentation;
12	ОПК-5	Able to assess mor- phofunctional, physio- logical conditions and pathological processes in the human body to solve professional problems		ИД -1 ОПК-5. He is proficient in the algorithm of clinical, la- boratory and functional diagnos- tics in solving professional problems. ИД -2 ОПК -5. Evaluates the results of clinical, laboratory and functional diagnostics in solving professional problems. ИД -3 ОПК -5. Determines morphofunctional, physiological states and pathological process-	 Scope of cytogenetic methods. Indications, contraindications, principles of preparing a child for molecular genetic and chromosomal analysis Basic medical documentation 	 Interpret the data of karyotypes, differen- tiate regular mosaic forms of the main chromosomal syn- dromes. Interpret molecular genetic data 	• The method of differentiation of chromosomes by external charac- teristics, their distribution into groups in ac- cordance with the international classification.

			es of the human body	used in medical		
				tion:		
				•genetic map. no-		
				tification of identi-		
				fied congenital		
				malformation,		
				phenotype map		
13	ОПК-7	Able to prescribe	ИД -1 ОПК 7 Conducts effec-	 Basic methods of 	• Fill out the basic	• Algorithm for
		treatment and monitor	tive, safe therapy based on clini-	collecting and pro-	medical documentation	searching medi-
		its effectiveness and	cal guidelines of the Ministry of	cessing statistical	of the medical genetic	cal information.
		safety	Health of Russia	information	consultation: genetic	
					map, notification of the	
					identified congenital	
					malformation, pheno-	
					type map;	
					• Enjoy the computer	
					scientific bases and In	
					ternet platforms for	
					searching medical in-	
					formation for the im-	
					plementation of pro-	
					fessional activities	
14	ПК -2	Examination of the	ИД -1 ПК -2 Collects com-	Research planning	• Use various infor-	• Methods of
		patient in order to es-	plaints, anamnesis of life and ill-	principles	mation and educa-	searching for
		tablish a diagnosis	ness of the patient and analyzes		tional technologies to	medical infor-
			the information received.		improve your profes-	mation using the
			ИД -2 ПК -2 Conducts a com-		sional level;	library fund and
			plete physical examination of the		• Organize a self-	Internet re-
			patient (examination, palpation,		learning process.	sources
			percussion, auscultation) and in-		 Conduct an analysis 	• Algorithm and
			terprets its results.		of scientific literature	methods of sci-
			ИД -3 IIK -2 Substantiates the		and the results of sci-	entific and prac-
			necessity and scope of laboratory		entific research, eval-	tical research
			examination of the patient.		uate the level of evi-	

ИД -4 ПК -2 Substantiates the	dence of the data ob-	
necessity and scope of instru-	tained	
mental examination of the pa-		
tient.		
ИД -5 ПК -2 Substantiates the		
need to refer the patient for con-		
sultations to specialist doctors.		
ИД -6 ПК -2 Analyzes the re-		
sults of the patient's examination,		
justifies and plans the volume of		
additional studies if necessary		
ИД -7 ПК -2 Interprets the re-		
sults of collecting information		
about the patient's disease.		
ИД -8 ПК -2 Interprets the data		
obtained during laboratory exam-		
ination of the patient.		
ИД -9 ПК -2 Interprets the data		
obtained during the instrumental		
examination of the patient.		
ИД -10 ПК -2 Interprets the data		
obtained in consultation with the		
patient by specialist doctors.		
ИД -12 ПК -2 Carries out differ-		
ential diagnosis of diseases of		
internal organs from other dis-		
eases		

2. Place of discipline in the structure of the educational program

The discipline "Medicine genetic" belongs to the basic part of Block 1 of the Federal State Educational Standard of Higher Education in the specialty "General Medicine".

4, The amount of discipline

№ № п/п	Type of work		Total credit units	Total bours	Semester number 8
11/ 11	Type		units		hours
1		2	3	4	5
1	Contact work of students w	ith teacher (total), including:	-	46	46
2	Lectures (L)		-	10	10
3	Lectures (L)		-	36	36
4	Seminars (C)		-	-	-
5	Laboratory work (LR)		-		
6	Independent work of the st	udent (IWS)	-	26	26
7	Intermediate type	credit (C)	+	-	+
	appraisals	exam (E)	-	-	-
8	TOTAL: General labor	hours	-	72	72
	intensity	ZET	2	2	2

5. Content of the discipline

	N⁰	The name of the discipline	Types of edu	ucational a	in hours)	Forms of	
п/№	Semester number	section	L	PZ	IWS	Total	monitoring progress
1	2	3	4	5	6	7	8
1.	8	Medicine genetic	10	36	26	72	test work, interview on situational tasks, written or computer testing, individual homework, essay
Total			10	36	26	72	offset

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

№/п	№ semestr	Name of educational and methodological development
1	8	1. Пузырев, В.П. Медицинская патогенетика: дидактические аспекты [Электрон-
		ный
		ресурс]/В.П. Пузырев //Медицинская генетика, 2010 9(12).
		http://biblioclub.ru/index.php?page=book_view&book_id=237645)
		2. Основы генетики и наследственные нарушения развития у детей : учеб. пособие
		для вузов / А. Ю. Асанов, А. Ю. Асанов, Н. С. Демикова, С. А. Морозов М. :
		Academia,2003 216 c.

7.Фонд оценочных средств для проведения промежуточной аттестации обучающихся по дисциплине

N⁰	List of	N⁰	No. semester	Evaluation	Grading scale	Name FOS
	competencies	semester		criterion (s)		
1	2	3	4	5	6	7
1	УК-1	8	see the standard for	see the standard	see the standard	tests, situational
	ОПК-1		assessing the quali-	for assessing the	for assessing the	tasks, exam
			ty of education,	quality of educa-	quality of educa-	tickets
	OHK-2,		approved. By order	tion, approved. By	tion, approved. By	
	ОПК-5,		of the Federal State	order of the Fed-	order of the Feder-	
	ОПК-7,		Budgetary Educa-	eral State Budget-	al State Budgetary	
	ПК-2		tional Institution of	ary Educational	Educational Insti-	
			Higher Education	Institution of	tution of Higher	
			SOGMA of the	Higher Education	Education SOG-	
			Ministry of Health	SOGMA of the	MA of the Minis-	
			of Russia dated	Ministry of Health	try of Health of	
			10.07.2018, No. 26	of Russia dated	Russia dated	
				10.07.2018, No.	10.07.2018, No.	
				26	26	

8. Fund of assessment tools for intermediate certification of students in the discipline Main literature

				Кол-	B0
π /	Наименование	Автор (ы)	Год, место	экземпляров	
			издания	в библиоте-	на кафед-
				ке	pe
	Medical genetics	Lynn B. Jorde,	Philadelphia:	50	
1		John C. Carey,	Elsevier, Book		
		Michael J. Bam-	aid interna-		
		shad	tional, 2016		
2	Клиническая генетика:	Бочков Н.П	М.: ГЭОТАР-	21	2
	учебник		Медиа, 2001,	20	
			2002,	37	
			2004,	4	
			2006,	39	
			2013	«Консультант	студента»
				http://www.stu	dmedlib.ru/
				book/ISBN978	3597043570

				0.htr	nl
				http://www.stu book/ISBN592 ml	idmedlib.ru/ 23104539.ht
3.	Наследственные синдромы	С.И. Козлова и	М.: Практика,		
	и медико-генетическое кон-	др.	1996,	94	3
	сультирование		2007	1	
4.	Медицинская и клиниче-	ред. О.О. Яну-	М.: ГЭОТАР-	4	
	ская генетика для стомато-	шевич	Медиа, 2008,	20	1
	логов: учеб. пособие		2015	«Консультант студента»	
				http://www.stu	ıdmedlib.ru/
				book/ISBN978	3597043175
				7.htr	nl
5.	Медицинская генетика:	Гинтер Е.К.	М.: Медици-	5	1
	учебник		на, 2003		

Additional literature

п/	Наименование		Год место	Кол-во	
II/ NG		Автор (ы)	год, место	D GUGUUOTO	изина
JN⊻			издания	в биолиоте-	на кафед-
1			D		pe
1.	I енеалогическии метод в	сост. 1.И. Бу-	Владикавказ,	ЭБ СОГ МА	25
	диагностике и профилакти-	кановская и др.	2012		
	ке наследственных болез-				
	ней: учебметод пособие				
	для студентов лечебного,				
	педиатрического и медико-				
	профилактического фа-				
	культетов				
2.	Наглядная медицинская ге-	Притчард Д.,	М. : ГЭОТАР-	1	
	нетика	Корф Б.	Медиа, 2009		
3.	Генетика в практике педи-	Вахарловский	СПб : Феникс,	1	
	атра : руководство для вра-	В. Г., Романен-	2009		
	чей	ко О. П., Гор-			
		бунова В. Н.			
4	Медицинская генетика. 397	Ньюсбаум Р.Л.,	М. : ГЭОТАР-	1	
	наглядных иллюстраций,	Мак-Иннес	Медиа, 2010		
	схем и таблиц, 43 клиниче-	Р.Р., Виллард			
	ских случая: учеб.пособие	Х.Ф.			
5	ДНК-диагностика и меди-	Иллариошкин	М.: МИА,	1	
	ко-генетическое консульти-	С. Н.	2004		
	рование				
6	Тератология человека: Ру-	ред. Г.И. Лазюк	M.:	5	
	ководство для врачей		Медицина,		
			1991		
7	Клиническая генетика. Ге-	Мутовин Г.Р.	М. : ГЭОТАР-	«Консультант	студента»
	номика и протеомика		Медиа, 2010	http://www.stu	dmedlib.ru/
	наследственной патологии:			book/ISBN978	3597041152
	учеб.пособие			0.htn	nl

9. The list of resources of the information and telecommunication network "Internet" neces**sary for mastering the discipline** http://www.vogis.org

http://www.medgenetics.ru

http://molbiol.edu.ru http://www.ncbi.nlm.nih.gov http://ru.wikipedia.org/wiki/Генетика человека http://bse.sci-lib.com/article009384.html http://bio.1september.ru/2002/02/2.htm http://genetics.rusmedserv.com/ www.geneforum.ru/ http://humgenlab.vigg.ru/ http://www.medgen.ru/ http://humbio.ru/humbio/genetics.htm http://schools.keldysh.ru/sch1952/Pages/Timokhina04/Biolog/18.htm http://genetica.meduniver.com/ http://lib.mexmat.ru/books/9478 http://moikompas.ru/compas/chromatic aberration http://www.genepassport.ru http://elibrary.ru/defaultx.asp

10. Guidelines for organizing the study of the discipline:

Training consists of contact work (46 hours), including a lecture course (10 hours) and practical exercises (36 hours), as well as independent work (26 hours).

When studying the discipline, use the basic and additional literature and master practical skills: description of the patient's phenotype, drawing up a pedigree and calculating genetic risk, interpretation of laboratory results (decoding of karyotypes, interpretation of molecular genetic studies) and paraclinical examination methods, differentiation of the most common monogenic and chromosomal diseases.

In accordance with the requirements of the Federal State Educational Standard, active and interactive forms of conducting classes - business and role-playing games - are widely used in the educational process. The proportion of classes conducted in interactive forms is at least 10% of classroom lessons.

Independent work of students implies preparation for practical classes and includes working out basic and additional literature, completing assignments for extracurricular independent work, writing essays, compiling monothematic folders, tables.

Work with educational literature is considered as a type of educational work in the discipline "medical genetics" and is performed within the hours allotted for its study (in the CDS section). Each student is provided with access to the library funds of the Academy and the department.

For each section of the discipline, guidelines for students and guidelines for teachers have been developed.

During the study of the discipline, students independently conduct an examination of the patient and draw up a phenotype map and submit an abstract on the topic. Writing an abstract, an educational pheno-type map contributes to the formation of clinical thinking and practical skills (abilities).

The student's work in a group forms a sense of teamwork and sociability.

Teaching students helps them develop the skills of communicating with the patient, taking into account the ethical and deontological characteristics of pathology and patients. Independent work with patients contributes to the formation of professional behavior, accuracy, and discipline.

The initial level of students' knowledge is determined by testing, the current control of mastering the subject is determined by oral questioning during classes, during clinical analyzes, when solving typical situational tasks.

At the end of the study of the discipline, an intermediate control of knowledge is carried out using test control, testing of practical skills, solving situational problems, interviews on questions.

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

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

№/ П	Equipment identification	number	Technical condition
1	2	3	4
	Special equipment		
1.	teaching aids: terminological reference book, semiotics and clinical diagnosis of hereditary diseases, genealogical method in the diagnosis and prevention of hereditary diseases, neonatal screen- ing	1	satisfying
2.	sets of multimedia visual materials for various sections of the discipline	1	satisfying
3.	posters: classification of mutations, DNA structure, translation, DNA repli- cation, Down syndrome, Edwards syn- drome, Shereshevsky-Turner syndrome, adrenogenital syndrome, an algorithm for examining a pregnant woman, vari- ants of pedigree records, examples of designating numerical and structural changes in the karyotype	9	satisfying
4.	audio lectures	1	satisfying
5.	A computer	1	satisfying
6.	Printer	1	satisfying

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 assignments. 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. Lectures can be presented in the form of audio, video, "live lectures", etc. Conducting seminars and practical classes is possible in online mode both in synchronous and asynchronous modes. Seminars can be conducted in the form of web conferences.