### № ЛД-16ИН

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 «Clinical Immunology»

the main professional educational program of higher education - specialty program in the specialty 31.05.01 General Medicine, partially implemented in English, approved in May 24, 2023

Form of education	Full-time	
The period of development	6	
Department of Internal Medicine № 3		

Vladikavkaz, 2023

When developing the work program, the disciplines are based on:

1. Federal State Educational Standard of Higher Education for the specialty 31.05.01Medical Care, approved by the Ministry of Education and Science of the Russian Federation on Febrary 9, 2016 No. 95

2. The curriculum of the MPEP HE in the specialty 31.05.01 Medical care ЛД-16-03-18ИН,

ЛД-16-04-19ИН,

ЛД-16-05-20ИН, approved by the Academic Council of the Federal State Budgetary Educational Institution of the Ministry of Higher Education NOSMA of the Ministry of Health of the Russian Federation on May 24, 2023, Protocol №. 8

The working program of the discipline was approved at the meeting of the Department of Internal Diseases №. 3 of May 15, 2023, Protocol N 10

The working program of the discipline was approved at the meeting of the central coordinating Educational and Methodological Council of May 23, 2023, Protocol N 5.

The working program of the discipline was approved by the Academic Council Federal State Educational Institution of Higher Education NOSMA of the Ministry of Health of the Russian Federation of May 24, 2023, Protocol № 8.

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#### **Developers:**

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#### **Content of Work Programme.**

1. Name of the academic discipline.

2. List of anticipated results after completing the training course (within the framework of a Specialist's degree studies).

3. Defining where the academic discipline belongs in the structure of a Specialist's degree studies.

4. Amount of credit units, academic or astronomic hours forface-to-face teaching classes and for students' independent work.

5. Content of the course structured into modules with the amount of academic or astronomic hours and types of classes scheduled for each module.

- 6. List of learning materials necessary for students' independent work.
- 7. Outline of standardsof preliminary assessment of students' performance.
- 8. Reading list of published sources required to complete the course.
- 9. List of online resources required to complete the course.
- 10. Methodology guidelines for students.
- 11. Modern learning techniques used in the training processincluding the list of software programs and electronic databases (if necessary).
- 12. List of equipment used in the training process.
- 13. Conducting educational activities using e-learning and distance learning technologies.

Name of the discipline " Clinical Immunology»
The list of planned results of training in the discipline "Clinical Immunology" and the results of the development of the educational program

	Code of			Results	
No	Compe tency	Course Content	To know	To do	To use
1	2	3			
1	EPC1	Definition of clinical immunology, objectives. Immune status. Principles of determination of immune status	General terms used to study various aspects of clinical immunology	Professional literature, Internet resources	Solving typical problems using published works and online resurces
2	PC1	Definition of clinical immunology, objectives. Immune status. Principles of determination of immune status	To know methods for determining immune status, the reasons and principles of determining immune status, immunopathogen esis, diagnostic methods	To state the indications for a clinical immunologic al screening, to interpret the results,	Identifying factors contributing adverse effects on the patient's immune system skills to conduct prophylactic tic events for prevent action these reasons

3	PC5	Definition of			
		clinical	Immune	Justify the	Skills to collect
		immunology,	assessment	need	immunological
		objectives.	methods	Clinical	history, ana-
		Immune status.	status, indications	immunologic	lysis and
		Principles of	and accepted	al	interpretation of
		determination	scores of his	examination	the results
		of immune	assessment	patient's	tats laboratory
		status		interpretation	displays
				immune	assessment of the
				assessment	immune system
				results	Level 1 Tests
				Level 1 Test	
				Status	
5	PC6	Definition of	Basic forms of	Substantiate	Skills of
		clinical	munopathology	the nature	preliminary
		immunology,	(immunodeficienc	immunopatho	diagnosis based on
		objectives.	y	logical pro	the results of
		Immune status.	ficitis,	cess, clinical	laboratory
		Principles of	autoimmune,	manifestation	examination of
		determination	allergic	S	patients;
		of immune	pathologies)	principles of	
		status		pathogenetic	
				sky therapy;	
6	PC1	Immunodeficien	Development	Evaluate	Identifying
		cies of genetic	mechanisms	condition	factors
		origin (primary),	immune response	Immune	contributing
		classification,	factors	system and	adverse effects
		main types.	affecting	determine	on the patient's
		Principles of	immune	pour factors	immune system
		diagnostic	functioning	affecting	enta
		procedures and	systems; basic	her	
		treatment.	immuno		
		Secondary	pathological		
		(acquired)	conditions;		
		immunodeficien	immunological		
		cies, definition,	alsorders		
		alagnosing,	with the		
		cimical	aevelopment of		
		symptoms,	1mmunopatholog1		
		approaches to	callergy		
		reaument.			
	1	1		1	

7	PC5	Immunodeficien	Immune	Justify the	Collection skills
		cies of genetic	assessment	need	immunological
		origin (primary).	methods	for clinical	history, ana-
		classification.	status, indications	immunologic	lysis and
		main types.	and accepted	al	interpretation of
		Principles of	scores of his	examination	the results
		diagnostic	assessment	natient's	tats laboratory
		procedures and		interpretation	displays
		treatment		immune	assessment of the
		Secondary		assessment	immune system
		(acquired)		results	Level 1 Tests
		immunodeficien		Level 1 Test	
		cies definition		Status	
		diagnosing		Status	
		clinical			
		symptoms			
		approaches to			
		treatment			
8	PC6	Immunodeficien	Basic forms of	Substantiate	Skills of
0		cies of genetic	munonathology	the nature	nreliminary
		origin (primary)	(immunodeficienc	immunonatho	diagnosis based on
		classification	V	logical pro	the results of
		main types	y primary and	cess clinical	laboratory
		Principles of	secondary ficitis)	manifestation	examination of
		diagnostic	secondary neurs)		examination of
		procedures and		s principles of	patients, and, in
		treatment		principies of	to an additional
		Secondary		sky therapy:	evamination and
		(acquired)		sky incrapy,	to specialist
		(acquired)			doctors
		cies definition			0001015
		diagnosing			
		clinical			
		symptoms			
		approaches to			
		treatment			
9	PC1	Immunodeficien	Development	Fyaluate	Identifying
<b> </b>		cies of genetic	mechanisms	condition	factors
		origin (primary)	immune response	immune	contributing
		classification	factors	system and	adverse effects
		main types	affecting	determine	on the natient's
		Principles of	immune	pour factors	immune system
		diagnostic	functioning	affecting	enta
		procedures and	systems basic	her	
		treatment	immuno		
		Secondary	pathological		
		(acquired)	conditions:		
		immunodeficien	immunological		

		cies, definition, diagnosing, clinical symptoms, approaches to treatment.	disorders with the development of immunopathologi cal gee		
1 0	PC6	Immunodeficien cies of genetic origin (primary), classification, main types. Principles of diagnostic procedures and treatment. Secondary (acquired) immunodeficien cies, definition, diagnosing, clinical symptoms, approaches to treatment.	Basic forms of munopathology (secondary immunodeficienc y ficits)	Substantiate the nature immunopatho logical pro cess, clinical manifestation s principles of pathogenetic sky therapy;	Skills of preliminary diagnosis based on the results of laboratory examination of patients; and, if necessary, referral to an additional examination and to specialist doctors
1	PC1	Autoimmune diseases. General terms. Systemic lupus erythematosus (SLE), immunopathoge nesis ,immunodi agnosis, immunocorrecti on. Rheumatoid arthritis, immunopatholo gy, immunodiagnosi s,immunocorrect ion	Mechanisms of the development of the immune response in autoimmune disorders (SLE, RA), immunological disorders in the development of autoimmune pathology	To assess the state of the immune system in autoimmune diseases (SLE, RA)	Assess the state of the immune system and identify factors having an adverse effect on the patient's immune system, taking preventive measures to prevent these causes
1 2	PC5	Autoimmune diseases. General terms. Systemic lupus erythematosus	Methods for assessing immune status, indications and principles for its assessment	Substantiate the need for clinical and immunologic al	Readiness to collect and analyze patient complaints, his medical history

		(SLE)		examination	results of
		immunonathoge		of the natient	laboratory
		nesis immunodi		interpret the	immunological
		agnosis		results of the	studies of level 1
		immunocorrecti		accessment of	in order to
		an Phaymateid		the immune	no order to
		on. Kneumatoid			recognize the state
		artinitus,			or establish the
		immunopatholo		according to	presence or
		gy,		tests of the	absence of a
		immunodiagnosi		lst level	disease
		s,1mmunocorrect			
		ion.			
1	PC6	Autoimmune	Main forms of	Substantiate	Skills of
3		diseases.	autoimmune	the nature of	preliminary
		General terms.	diseases (SLE,	the	diagnosis based on
		Systemic lupus	RA, myasthenia	immunopatho	the results of
		erythematosus	gravis,	logical	laboratory
		(SLE),	autoimmune	process,	examination of
		immunopathoge	thyroiditis),	justify the	patients;
		nesis ,immunodi		need for	1
		agnosis.		clinical and	
		immunocorrecti		immunologic	
		on. Rheumatoid		al	
		arthritis		examination	
		immunopatholo			
		ov			
		immunodiagnosi			
		simmunocorrect			
		ion			
1	PC1	Immunonathoge	Mechanisms of	Assess the	Identify factors
		namic of	the development	state of the	that adversely
4		autoimmuno	of the immune	immuno	affect the notiont's
		diagonage of the	of the minute	initiatie in	immuno avatam
		diseases of the		system m	talia marganting
		(maritical a			take preventive
			alsorders (SLE,	diseases	measures to
		scierosis,	$  KA \rangle,$	(SLE, KA,	prevent these
		myastnenia grav	immunological	myastnenia	causes
		is and others), of	disorders in the	gravıs,	
		endocrine	development of	autoimmune	
		organs	immunopathology	thyroiditis)	
		(autoimmune			
		thyroiditis and			
		others).			
1	PC5	Immunopathoge	Methods for	Substantiate	Readiness to
5		nesis of	assessing immune	the need for	collect and
		autoimmune	status, indications	clinical and	analyze patient
		diseases of the	and principles for	immunologic	complaints, his
		nervous system	its assessment	al	medical history,

		(multiple		examination	results of
		sclerosis,		of the patient,	laboratory
		myasthenia grav		interpret the	immunological
		is and others), of		results of the	studies of level 1
		endocrine		assessment of	in order to
		organs		the immune	recognize the state
		(autoimmune		status	or establish the
		thyroiditis and		according to	presence or
		others).		tests of the	absence of a
				1st level	disease
1	PC6	Immunopathoge	Main forms of	The ability to	Skills of
6		nesis of	autoimmune	identify the	preliminary
		autoimmune	diseases (SLE,	patient's main	diagnosis based on
		diseases of the	RA),	symptoms,	the results of
		nervous system		disease	laboratory
		(multiple		syndromes,	examination of
		sclerosis,		nosological	patients;
		myasthenia grav		forms of the	
		is and others), of		main forms of	
		endocrine		autoimmune	
		organs		diseases of	
		(autoimmune		SLE, RA,	
		thyroiditis and		myasthenia	
		others).		gravis,	
				autoimmune	
				thyroiditis) in	
				accordance	
				with the	
				International	
				Statistical	
				Classification	
				of Diseases	
				and Health	
				Problems, X	
	DCI			revision	
	PC1	Infections of the	Mechanisms of	To assess the	Identify factors
7		immune system.	the development	state of the	that adversely
		Human	of the immune	immune	affect the patient's
		immunodeficien	response in	system in	immune system,
		cy virus (HIV).	infections of the	case of	take preventive
		The Enstein	(Enstein Dam	intections of	measures to
		Barr virus	(Epstein-Barr	uie immune	prevent these
		barras simula	viruses, nerpes	System	causes
		nerpes simplex	simplex,	Lepstein-Barr	
		virus,	eytomegalovirus	hornos	
		cytomegalovirus	and other nothogona)	imples	
		and other	paulogells),	simplex,	
1			minunoiogicai	cytomegalov1	

		pathogenes	disorders in the	rus and other	
			development of	pathogens)	
			immunopathology		
1	PC5	Infections of the	Methods for	Substantiate	Readiness to
8		immune system.	assessing immune	the need for	collect and
		Human	status, indications	clinical and	analyze patient
		immunodeficien	and principles for	immunologic	complaints, his
		cy virus (HIV)	its assessment	al	medical history,
		The Enstein		examination	results of
		The Epstein-		of the patient,	laboratory
		Barr virus,		interpret the	immunological
		herpes simplex		results of the	studies of level 1
		virus,		assessment of	in order to
		cytomegalovirus		the immune	recognize the state
		and other		status	or establish the
		pathogenes		according to	presence or
		P		tests of the	absence of a
1	DC(	Infontions of the	Main farmer of the	Ist level	disease
	PCO			the nature of	SKIIIS OI
9		immune system.	for infections of	the	diagnosis based on
		Human	the immune	immunonatho	the results of
		immunodeficien	system (Enstein-		laboratory
		cy virus (HIV).	Barr viruses	nrocess	examination of
		The Epstein–	hernes simplex	clinical	natients.
		Barr virus.	cytomegalovirus	manifestation	putients,
		hernes simplex		s. principles	
		virus		of	
		viius,		pathogenetic	
				therapy;	
		and other		justify the	
		pathogenes		need for	
				clinical and	
				immunologic	
				al	
				examination	
2	PC1	Allergy. Types	Development	Evaluate	Identifying
0		of allergens. The	mechanisms	condition	factors
		Gell-Coombs	immune response	immune	contributing
		classification of	factors	system and	adverse effects
		hypersensitivity	affecting	determine	on the patient's
		reactions of the	immune	pour factors	immune system
		111 immune system.	runctioning	attecting	enta for
		Allergy	systems;	ner	allergopathology,
		alagnosis.	immunological		prophylaxis
		Principles of	alsorders		tic events for
		allaray	with the		prevent action
		allergy.	aevelopment of		these reasons

		Therapeutic	allergopatho-		
		strategies for all	gee		
		ergic diseases.			
		Recoverv.			
		Prevention of			
		pathologies of			
		allergic diseases.			
2	PC5	Allergy Types	Methods for	Substantiate	Readiness to
1	100	of allergens. The	assessing immune	the need for a	collect and
		Gell-Coombs	status indications	clinical and	analyze natient
		classification of	and principles for	immunologic	complaints his
		hypersensitivity	its assessment	al	medical history
		reactions of the		examination	results of
		immune system		of the natient	laboratory
		Δllergy		interpret the	immunological
		diagnosis		results of an	studies of level 1
		Drinciples of		accessment of	in order to
		diagnosing		the immune	racogniza
		alleroy		status the	allergonathology
		Therapoutic		regulte of	ancigopatiology
		strategies for all		allerov tests	presence or
		argie disasses		anergy tests	absence of a
		Pocovoru			disease
		Broughtion of			uisease
		rievenuon of			
		pathologies of			
	DC6	Allorgy Types	Main forms of	Substantiata	Strilla of
$\begin{vmatrix} 2\\ 2 \end{vmatrix}$		of allergens. The	allergonathology	the noture	preliminary
		Gell Coombs	anergopaniology	immunonatho	diagnosis based on
		classification of		logical pro	the results of
		byporgongitivity			laboratory
		ropotions of the		manifostation	avomination of
		immuno system		mannestation	examination of
				s nuinain1ag of	patients,
		Anergy		principies of	
		Dringinosis.		pathogenetic	
		diagnosing		sky merapy,	
				fushing the need for	
		The response is		aliminal	
		Therapeutic			
		strategies for all			
		ergic diseases.			
		Recovery.		examination	
		Prevention of		vania;	
		pathologies of			
		allergic diseases.	Masharian	<b>T - - - - - - - - - + 1</b>	Q1-:11- (- : 1 (*C
$\begin{vmatrix} 2 \\ 2 \end{vmatrix}$		Astnma, types,	iviecnanisms of	10 assess the	SKIIIS to identify
3		etiology and	the development	state of the	factors that have
	1	Inathogenesis	ot the immune	1 1mmune	an adverse effect

24	PC5	(immunopathog enesis ) of the main types of asthma. Diagnosing. Asthma , types, etiology and pathogenesis (immunopathog enesis ) of the main types of asthma. Diagnosing.	response, influencing factors, immunological disorders in the development of bronchial asthma Methods for assessing immune status, indications and principles for its assessment	system and determine the factors affecting it with the development of bronchial asthma Substantiate the need for clinical and immunologic al examination of the patient, interpret the results of the assessment of the immune status	on the patient's immune system, and take preventive measures to prevent these causes Readiness to collect and analyze patient complaints, his medical history, results of laboratory immunological studies of level 1 in order to recognize the state or establish the
2	PC6	Asthma , types,	Main forms,	according to tests of the 1st level, the results of allergological tests Substantiate	presence or absence of a disease Skills in
5		etiology and pathogenesis (immunopathog enesis ) of the main types of asthma. Diagnosing.	symptoms of bronchial asthma	the nature of the immunopatho logical process, clinical manifestation s, principles of pathogenetic therapy; justify the need for clinical and immunologic al examination;	determining the patient's main symptoms of bronchial asthma, in accordance with the International Statistical Classification of Diseases and Health Problems, X revision
$\begin{vmatrix} 2\\ 6 \end{vmatrix}$	PC8	Asthma, types, etiology and pathogenesis	Management tactics for patients with asthma	Substantiate the need for clinical and	Algorithm for making a preliminary

		(immunopathog enesis) of the main types of asthma		immunologic al examination;	diagnosis and, if necessary, referral for an additional examination to
27	PC1	Allergic rhinitis. Nosological clas sification. Diagnosing. Differential diagnosing.	Mechanisms of the development of the immune response, influencing factors, immunological disorders in the development of bronchial asthma	To assess the state of the immune system and determine the factors affecting it with the development of bronchial	examination to specialist doctors Skills to identify factors that have an adverse effect on the patient's immune system, and take preventive measures to prevent these causes
28	PC5	Allergic rhinitis. Nosological clas sification. Diagnosing. Differential diagnosing.	Methods for assessing immune status, indications and principles for its assessment	Substantiate the need for clinical and immunologic al examination of the patient, interpret the results of the assessment of the immune status according to tests of the 1st level, the results of allergological tests	Readiness to collect and analyze patient complaints, his medical history, results of laboratory immunological studies of level 1 in order to recognize the state or establish the presence of a disease

2	PC6	Allergic rhinitis.	Main forms,	Substantiate	Skills to determine
9		Nosological clas	symptoms of	the nature of	the patient's main
		sification.	allergic rhinitis in	the	symptoms of
		Diagnosing.	accordance with	immunopatho	allergic rhinitis
		Differential	the International	logical	and, if necessary,
		diagnosing.	Statistical	process,	referral to an
			Classification of	clinical	additional
			Diseases and	manifestation	examination and
			Health Problems,	s, principles	to specialist
			X revision	of	doctors
				pathogenetic	
				therapy;	
				justify the	
				need for	
				clinical and	
				immunologic	
				al	
				examination;	
3	PC1	Atopic	Mechanisms of	To assess the	Skills to identify
0		dermatitis,	the development	state of the	factors that have
		clinical stages,	of the immune	immune	an adverse effect
		differential	response,	system and	on the patient's
		diagnosing.	influencing	determine the	immune system,
		Food allergies.	factors,	factors that	and take
		Clinical stages	immunological	affect it with	preventive
		of food	disorders in	atopic	measures to
		allergies.	atopic dermatitis,	dermatitis	prevent these
		Diagnosing.	food allergies	and food	causes
				allergies	
	DOF		1 1 0	1	1.
3	PC5	Atopic	methods for	substantiate	readiness to
1		dermatitis,	assessing immune	the need for	collect and
		clinical stages,	status, indications	clinical and	analyze patient
		differential	and principles for		complaints, nis
		diagnosing.	its assessment	al	medical history,
		Food allergies.		examination	results of
		Clinical stages		of the patient,	
		0I 1000		interpret the	immunological
		Dia an a sin a		results of the	studies of level 1
		Diagnosing.		assessment of	in order to
				the immune	recognize the state
				status	or establish the
				according to	presence or
				tests of the	absence of a
-		Atomia	Diagnastis	To institute	The ability of
3	PCO	Atopic	Diagnostic mothoda for	10 justify the	I ne adility to
3		dermatitis,	methods for	need for	determine the
1		cimical stages,	atopic dermatitis	cinical and	patient's main

		differential diagnosing. Food allergies. Clinical stages of food allergies. Diagnosing.	and food allergies, types and indications for the use of immunotropic therapy	immunologic al examination of the patient, to carry out immunologic al diagnostics, to interpret the results of their main diagnostic allergological tests	pathological conditions, symptoms, in accordance with the International Statistical Classification of Diseases and Health Problems, X revision for atopic dermatitis and food allergies
3 4	PC8	Atopic dermatitis, clinical stages, differential diagnosing. Food allergies. Clinical stages of food allergies. Diagnosing.	Management tactics for patients with atopic dermatitis and food allergies	Justify the need for clinical and immunologic al examination;	Definitions of management tactics for patients with atopic dermatitis and food allergies
35	PC1	Hives and angioedema . Types, allergens. Typical disease patterns. Differential diagnosing with hereditary angioedema	mechanisms of the development of the immune response, influencing factors, immunological disorders in hives and angioedema Quincke	to assess the state of the immune system and determine the factors that affect it with urticaria and angioedema Quincke	Skills to identify factors that have an adverse effect on the patient's immune system, preventive measures to prevent the effects of these causes in case of hives and angioedema Quincke
3 6	PC5	Hives and angioedema . Types, allergens. Typical disease patterns. Differential diagnosing with hereditary	Methods for assessing the immune, allergological status, indications and principles for its assessment	substantiate the need for a clinical and immunologic al examination of the patient, interpret the results of the assessment of the immune	Collecting immunological and allergic biological history, ana- lysis and interpretation of the results tats laboratory displays assessment of the

		angioedema		status according to the tests of the 1st level, the results of the main allergological diagnostic tests	immune system test level 1 test results, results of major diagnostic allergology tests
37	PC6	Hives and angioedema . Types, allergens. Typical disease patterns. Differential diagnosing with hereditary angioedema	Basic forms of Munoallergopath ology: urticaria and angioedema	substantiate the nature immunopatho logical pro cess, clinical manifestation s principles of pathogenetic sky therapy; justify the need for clinical immunologic al examination vania;	Skills of preliminary diagnosis based on the results of laboratory examination of patients;
39	PC8	Hives and angioedema . Types, allergens. Typical disease patterns. Differential diagnosing with hereditary angioedema	Management tactics for patients with hives and angioedema Quincke	justify	Definitions of management tactics for patients with hives and angioedema Quincke
4 0	PC1	Drug allergy .Anaphyl axis . Etiology, pathogenesis. Typical patterns. Diagnosing. Prevention and treatment. First	mechanisms of the development of the immune response, with the development of drug allergies (anaphylactic shock, serum	assess the state of the immune system and determine the factors affecting the occurrence	identifying factors contributing adverse effects on the patient's immune system enta, carrying out preventive

		aid for a severe allergic reaction. Serum sickness. Etiology, pathogenesis. Typical patterns. Prevention and treatment. Other allergies (toxic epidermal necrolysis, allergic alveolitis and others)	sickness, Stevens- Johnson syndrome and Lyell syndrome)	and development, as well as aimed at eliminating the harmful effects on human health	tic events for prevent action these reasons
4	PC5	Drug allergy .Anaphyl axis . Etiology, pathogenesis. Typical patterns. Diagnosing. Prevention and treatment. First aid for a severe allergic reaction. Serum sickness. Etiology, pathogenesis. Typical patterns. Prevention and treatment. Other allergies (toxic epidermal necrolysis, allergic alveolitis and others).	Methods for assessing the immune status, indications and principles for assessing the immune status of patients with drug allergy	substantiate the need for clinical, immunologic al, allergological examination of the patient, interpret the results of the main diagnostic allergological tests	To have skills in collecting an immunological and allergological history, analyzing the results of laboratory tests in order to recognize a pathological condition or to establish the presence or absence of a disease
42	PC6	Drug allergy .Anaphyl axis . Etiology, pathogenesis. Typical patterns. Diagnosing. Prevention and treatment. First aid for a severe allergic reaction. Serum sickness. Etiology,	Diagnostic methods, types and indications for the use of therapy for anaphylactic shock, drug allergy	To justify the need for a clinical and immunologic al examination of the patient, to interpret the results of their diagnostic allergological	The ability to determine the main drug allergies in the patient in accordance with the International Statistical Classification of Diseases and Health Problems, X revision for

		pathogenesis. Typical patterns. Prevention and treatment. Other allergies (toxic epidermal necrolysis, allergic alveolitis and others).		tests and drug allergy	drug allergies, anaphylactic shock
4 3	PC8	Drug allergy .Anaphyl axis . Etiology, pathogenesis. Typical patterns. Diagnosing. Prevention and treatment. First aid for a severe allergic reaction. Serum sickness. Etiology, pathogenesis. Typical patterns. Prevention and treatment. Other allergies (toxic epidermal necrolysis, allergic alveolitis and others).	Management tactics for patients with drug allergies	To substantiate the management tactics of patients with drug allergies	Definitions of management tactics for patients with drug allergies
44	PC1	Immunotherapy . Main types of immunotherapy, indications and contraindication s.	Set of measures directed at maintaining good health and following healthy lifestyle habits	To determine the factors affecting immune system	To have the skills for for finding the factors affecting immune system
4 5	PC8	Immunotherapy . Main types of immunotherapy, indications and contraindication s.	To know the types of immunotropic therapy and indications for it use	To state the indications for immunocorre cting therapy	To use the basic treatment tools for emergency medical care for patients with immune disorders

# **3.Defining where the academic discipline belongs in the structure of a Specialist's degree studies.**

The academic discipline Immunology – clinical immunology is a part of the professional cycle of sciences outlined to the base of block 1 in the Federal State Education Standard Higher Education, specialty General Medicine.

# 4. Amount of credit units, academic or astronomic hours for face-to-face teaching classes and for students' independent work.

No					Semester
110.	Type of <b>v</b>	vork	Total credits	Total hours	6
					hours
1	2		3	4	5
1	Face-to-face wo	ork with a			
	tutor (total), incl	uding		46	46
2	Lectures (L)			14	14
3	Clinical work (CV	W)			
				32	32
4	Seminars (S)			-	-
5	Laboratory work	(LW)		-	-
6	Independent wor	rk (IW)			
				26	26
7	Type of preliminary	Credit (C)	-	-	-
	performance	Grade (G)			-
	assessment				
8	Total	hours		72	72
		credits	2	2	2

5. Content of the course

			Type of work					Type of
1	Sem ester	Торіс		(hours)			current performance	
			L	LW	CW	IW	Total	assessment
1	2	3	4	5	6	7	8	9
1		Definition of clinical immunology, objectives.						
		Immunestatus.Methods of diagnosing in clinical immunology	2		2	2	6	1, 51
2		Immunodeficiencies of genetic origin (primary), classification, main types. Principlesofdiagnosticprocedu resandtreatment	2		2		4	I, T, SP
3	6	Secondary (acquired) immunodeficiencies, definition, diagnosing, clinical symptoms, approaches to treatment.			2	2	4	I, T, SP
4		Autoimmune diseases. General terms. Systemic lupus erythematosus (SLE), immunopathogenesis ,immun odiagnosis, immunocorrection.			2	2	4	I, T, SP
5		Rheumatoid arthritis, immunopathology, immunodiagnosis, immunocorrection			2		2	

6	Immunopathogenesis of autoimmune diseases of the nervous system (multiple sclerosis, myasthenia gravis and others), of endocrine organs (autoimmune thyroiditis and others)			2	2	I, T, SP
7	Infections of the immune system. Human immunodeficiency virus (HIV). The Epstein–Barr virus, herpes simplex virus, cytomegalovirus and other pathogenes		2	2	4	I, T, SP
8	Allergy. The Ado andGell- Coombs classification of hypersensitivity reactions of the immune system.		2	2	4	I, T, SP
9	Allergy diagnosis. Principles of diagnosing allergy	2	2		4	I, T, SP
10	Asthma , types, etiology and pathogenesis (immunopathogenesis ) of the main types of asthma. Diagnosing		2	2	4	I, T, SP, ST
11	Allergic rhinitis. Diagnosing. Differential diagnosing.	2	2		4	I, T, SP,ST
12	Atopic dermatitis, clinical stages, differential diagnosing. Diagnosing.		2	2	4	I, T, SP,ST
13	Hives and angioedema . Types, allergens. Typical disease patterns. Differential diagnosing with hereditary angioedema	2	2	2	6	I, T, SP,ST

14	Drug allergy. Anaphylaxis . Etiology, pathogenesis. Typical patterns. Diagnosing. Prevention and treatment. First aid for a severe allergic reaction	2		2		4	I, T,Y3,ST
15	Serum sickness. Etiology, pathogenesis. Typical patterns. Prevention and treatment. Other allergies (toxic epidermal necrolysis, allergic alveolitis and others).				2	2	I, T, SP,ST
16	Therapeutic strategies for allergic diseases . Recovery. Prevention of pathologies of allergic diseases.			2	2	4	I, T, SP,ST
17	Immunotherapy . Main types of immunotherapy, indications and contraindications.	2		2	2	6	I, T, SP
18	Immunocorrection. Definition. Types of immunocorrection Immunomodulators, definition. Main types of immunomodulators (endogen e, bacterial, synthetic and others), modes of action. Indication for use.			2	2	4	I, T, SP
TOTAL	I	14	-	32	26	72	
Note: I –	Interviews, T – Tests, ST – Situationa	l Task	ks, SP	– Sta	ndard	Proble	ems

# 6. List of learning materials necessary for students' independent work.

No.	Semester	Name of publication (textbook)
1	6	«Первичные иммунодефициты.»Учебно - методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2015. – ЦМК терапевтических дисциплин. «Принципы диагностики и лечения аллергических заболеваний». Учебно-методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2014. – ЦМК терапевтических дисциплин.
3		«Крапивница и отек Квинке»Учебно - методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2018. – ЦМК терапевтических дисциплин.
4		«Лекарственная аллергия»Учебно- методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2019. – ЦМК терапевтических дисциплин.
5		«Бронхиальная астма». Учебно - методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2018. – ЦМК терапевтических дисциплин.
6		«Пищевая аллергия Атопический дерматит». Учебно - методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2010. – ЦМК терапевтических дисциплин.
7 8		«Неотложные состояния в аллергологии». Учебно - методическая разработка для самостоятельной подготовки студентов к практическому занятию. Владикавказ, 2010. – ЦМК терапевтических дисциплин.
9		Tests Summaries of lectures on clinical immunology and allergology

# 7. Outline of standards of preliminary assessment of students' performance

<b>No.</b>	Code of	Semest	Assessment	Assessment	Assessmen	Assessment
	Compe	er	index	criteria	t scale	tool
	tency					

1	2	3	4	5	6	7
1	EPC1	6	See The	See The	See The	Tests, oral
			Standard for	Standard for	Standard	quizzes,
	PCI		Training	Training	for	situational
	PC5		Quality	Quality	Training	tasks, etc.
			Assessment	Assessment	Quality	
	PC6		approved by	approved by	Assessment	
	PC8		the Order of	the Order of	approved	
			State-Funded	State-	by the	
			Educational	Funded	Order of	
			Institution	Educational	State-	
			of Higher	Institution	Funded	
			Professional	of Higher	Educational	
			Education	Professional	Institution	
			"North	Education	of Higher	
			Ossetian State	"North	Professiona	
			Medical	Ossetian Sta	1 Education	
			Academy" of t	te Medical	"North	
			he Ministry of	Academy" of	Ossetian St	
			Health of the	the	ate Medical	
			Russian	Ministry of	Academy"o	
			Federation	Health of	f the	
			No. 264/0 on	the Russian	Ministry of	
			10.07.2018	Federation	Health of	
				No. 264/0	the Russian	
				on	Federation	
				10.07.2018	No. 264/0	
					on	
					10.07.2018	
			1			

# 8. Reading list of published sources required to complete the course

	Name	Authors	Year,	Number of issues	
No.			place of publicatio	In the library	On campus

			n					
1	2	3	4	5	6			
	Main Published Sources							
1.	Иммунология: учебник	Хаитов Р. М.	М. : ГЭОТАР- Медиа,	102 31				
			2006, 2015	«Консультант студента»				
				http://www .ru/book/IS 433454.htm	.studmedlib BN9785970 ıl			
2.	Медицинская микробиология, вирусология и	ред. В.В. Зверев	М.: ГЭОТАР- Медиа,	T.1 – 240     T.2 – 236     «Консультант     студента»     http://www.studmedl     .ru/book/ISBN97859     436417.html				
	иммунология: учебник		2011, 2016					
				«Консульт студента» http://www .ru/book/IS 436424.htm	ант .studmedlib BN9785970 Il			
3.	Медицинская микробиология, вирусология, иммунология: учебник	ред. А.А. Воробьев	М.: МИА, 2004, 2006, 2008	15 1 5				
	Other Published Sources							
1.	Аллергология и иммунология: национальное	ред. Р.М. Хаитов	М.: ГЭОТАР- Медиа,	10				

	руководство		2009		
2.	Основыиммунологии	Ройт А.	М.: Мир, 1991	5	
3.	Иммунология : учебник	Ярилин А. А.	М.: ГЭОТАР- Медиа, 2010	1 «Консульт а» http://www .ru/book/IS 413197.htm	антстудент .studmedlib BN9785970 ll
4.	Клиническая иммунология и аллергология	ред Г. Лолор	М.: Практика, 2000	4	
5.	Клиническая иммунология и аллергология с основами общей иммунологии: учебник	Ковальчук Л.В., Ганковская Л.В., МешковаР.Я.	М.: ГЭОТАР - Медиа, 2011, 2012	20«Консультант студента»http://www.studmedlib .ru/book/ISBN9785970 422410.html	
6.	Аллергология: клиническиерекоменд ации	ред. Р.М. Хаитов	М.: ГЭОТАР - Медиа, 2006	10	
7.	Иммунология. Атлас: учеб.пособие	Хаитов Р.М., Ярилин А.А., Пинегин Б.В.	М.: ГЭОТАР - Медиа, 2011	«Консультант студента» http://www.studmedlib .ru/book/ISBN9785970 418581.html	
8.	Наглядная иммунология	Плейфэр Д.	М.: ГЭОТАР- Медиа, 2000	49	
9.	Медицинская микробиология, вирусология,	Борисов Л. Б.	М. : МИА, 2005	3	

	иммунология :				
	учебник				
10.	Клиническаяиммуноло гия : учебник	Земсков А. М., Земсков В. М., Караулов А. В.	М. : ГЭОТАР- Медиа, 2006, 2008	40«Консультант студента»http://www.studmedlib.ru/book/ISBN9785970 407752.html	
11.	Иммунология. Норма и патология: учебник	Хаитов Р.М., Игнатьева Г.А., Сидорович И.Г.	М.: Медицина, 2010	1	
12.	Медицинская микробиология, иммунология и вирусология: учебник	Коротяев А. И., Бабичев С. А.	СПб. :СпецЛит, 2008.	1	
13.	Основы клинической иммунологии: учеб.пособие	Е. Чепель и др.	М. : ГЭОТАР- Медиа, 2008	7	
14.	Практикум лабораторных работ с иллюстрированными ситуационными заданиями по микробиологии, иммунологии и вирусологии : учеб.пособие	ред. А. А. Воробьев	М. : МИА, 2008	1	
15.	Руководство по клинической иммунологии. Диагностика заболеваний иммунной системы: руководство для	Хаитов Р. М., Пинегин Б. В., Ярилин А. А.	М.: ГЭОТАР- Медиа, 2009	1 «Консульта студента» http://www .ru/book/IS2	ант .studmedlib BN9785970

	врачей			409176.html	
16.	Иммунология: практикум : учеб.пособие	ред. Л.В. Ковальчук	М. : ГЭОТАР- Медиа, 2010, 2015	1 «Консульт студента» http://www .ru/book/IS 435069.htm	ант .studmedlib BN9785970 ll
17.	Микробиология, вирусология и иммунология : руководство к лабораторным занятиям: учеб.пособие	ред. В. Б. Сбойчаков	М. : ГЭОТАР- Медиа, 2012, 2015	56 «Консульт студента» http://www .ru/book/IS 435755.htm	ант .studmedlib BN9785970 Il

СОГЛАСОВАНО Сод В Лоджаев

## 9. List of online resources required to complete the course.

- 1.http://immunology.org/
- 2. http://pathmicro.med.sc.edu/book/immunol-sta.htm
- 3. http://humbio.ru/humbio/immunology
- 4. www.pulmonology.ru
- 5. www.allergology.ru
- 6. www.raaci.ru

## 10. Methodology guidelines for students.

Training process consists of face-to-face work with tutors (lectures, clinical work) -46 hours, independent work -26 hours, total -72 hours, which amounts to 2 credits.

The work involves using modern information technologies and technical tools.

Practical clinical work is carried performed in study rooms on campus and in the hospitals. Patients with relevant issues may be examined in the presence of students.

Groups consist of 9-11 students each. Teaching in classes is conducted using print materials, sample medical papers, tests and situation tasks. Each topic of the course is accompanied by an established information pool.

The students gain professional skills and knowledge and also work at the personal qualities necessary in the profession.

According to the requirements of the Federal State Education Standard Higher Education the training process involves active and interactive learning (conversations, case studies, role play). Interactive learning amounts to no less than 15 per cent of total time in class.

Students' independent work implies out of class studying of a number of clinical immunology issues, preparing for performance assessment, accomplishing individual tasks.

Reading of professional publications is one of the forms of studying and should be performed according to the recommendations. Each student is provided with access to the library and department's methodology materials. There are methodology recommendations on each topic covered in the course for students and teachers.

Independent work with published sources helps form the ability to analyze medical and social issues, to use theoretical data and clinical evidence in various fields of professional and social activity.

Students' initial level is assessed by tests.

Current performance assessment is performed using:

- Interviews and oral quizzes
- Situational tasks
- Tests
- Assignments involving critical analysis of clinical studies
- Solving problems regarding patients' examination

At a typical class students will:

- taking a test
- try to solve a situational task
- give answers to the teacher's oral quiz questions

Students' independent work involves solving problems and situational tasks on the studied subjects.

At the end of the course there is a final test and oral quiz.

## 11. Modern learning techniques used in the training process.

Modern interactive learning activities amount to about 15 per cent of total time in class.

Tools for interactive learning: simulation (context learning, role play), others (case studies, lectures in the form of conversations with students).

## 12. List of equipment used in the training process.

The clinical bases of the Department of Internal Medicine No. 3 are:

State Healthcare Institution "Republican Clinical Hospital" – head of department's office and one study room

Clinical Hospital of North Ossetian State Medical Academy – 2 study rooms State Healthcare Institution "Medical clinic No. 1" – laboratory and 3 study rooms

No.	Item of Equipment	Amount	Technical condition		
1	2	3	4		
	Special Equipment				
1.	Toshiba Multimedia Projector	1	Satisfactory		
2.	Computer	6	Satisfactory		
3.	Laptop	1	Satisfactory		
4.	Copier	3	Satisfactory		
5.	Overhead	1	Satisfactory		
Phantoms					
6.	-	-	-		
Models					
7.	-	-	-		
8.	-	-	-		

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

In 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.

Conducting seminars and practical classes is possible in on-line mode, both in synchronous and asynchronous mode.Seminars can be held in the form of web conferences.