

APPROVED
Rector of the Federal State Budgetary
Educational Institution of Higher
Education "North-Ossetian State Medical
Academy" the Ministry of Health of the
Russian Federation (in abbreviated form-
NOSMA MOH Russia)



O.Remizov
«24» May, 2023

**EDUCATIONAL TRAINING PROGRAM OF DISCIPLINE
“HISTOLOGY, EMBRYOLOGY, CYTOLOGY”**

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

<u>Form of education</u>	<u>Full-time</u>
<u>The period of development</u>	<u>6</u>
<u>Department of</u>	<u>Biology and histology</u>

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

1. Federal State Educational Standard of Higher Education on specialty 31.05.01 General Medicine, approved by the Ministry of Education and Science of the Russian Federation on February, 09, 2016 №95
2. Academic plan on specialty 31.05.01 General Medicine,
ЛД-16-04-18 ИИ
ЛД-16-05-19 ИИ
ЛД-16-06-20 ИИ,

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

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

The educational training program of the discipline was approved by the Scientific Council of the State Medical University of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation from “24” May 2023, Protocol № 8.

Program developers:

Head of the department
Associate Professor



L.V. Bibaeva
L.A. Akoeva

Reviewers:

Dean of the faculty of normal
and pathological anatomy of medicine
«Kabardino-Balkar State University»
M.D. Professor

N.M. Mirzoeva

Head of the Department of Hygiene
of the MPF with Epidemiology
of FSBEI HE NOSMA MOH Russia
M. D. Professor

A.R. Kusova

The content of the program

1. name of the discipline;
2. list of planned learning outcomes on the discipline, the results correlated with the planned development of the educational program;
3. indication of the place of discipline in the educational structure of the program;
4. amount of discipline in credit units, indicating the number of academic or astronomical clocks allocated for the work of the contact of students with the teacher (by type of training sessions) and independent work of students;
5. content of the discipline, structured by topics (sections) with the amount allocated to them or academic astronomical clock and the types of training sessions;
6. list of training and methodological support for the independent work of students in the discipline;
7. evaluation fund for interim assessment of students in the discipline;
8. list of basic and additional educational literature necessary for the development of the discipline;
9. list of resource information and telecommunication network "Internet" (hereinafter - the "Internet" network), required for the development of the discipline;
10. guidelines for students to develop the discipline;
11. list of information technologies used in the implementation of the educational process on discipline, including a list of software and information systems of reference (if it's 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 expecting results of the training discipline and results of development of the educational program

№ № p/p	No. / competen ceindex	theme	Results of development		
			To know	to be able to	to manage
1	2	3			
1	GPC-9	Cell. Acellularstruct ure.	Cell structure. The main provisions of the cell theory. The structure of cell membranes. Intercellular contacts. Acellular tissue structures.	Identify cells of various shapes due to their functions; explain the differences in the structure of free and contact surface of the cell.	Skills of microscopic examination and analysis of histological preparations.
2-4	GPC-9	Cell. Cytoplasm. Core. Cell division.	The structure and function of cell organelles at the microscopic level; use specific data of the structure and chemical composition of organelles and inclusions for characterization of the metabolism and functional state of the cell. Structure and function of nucleus, the role of core in protein synthesis.	Identify at microscopic level, different types of organelles and inclusions based on their structural and cytochemical features. Determine the structural components of the nucleus.	Skills of microscopic examination and analysis of histological preparations.
5	GPC-9	Test on cytology	All the studied theoretical material.	define and differentiate the histological tissue structures in micropreparations.	Use theoretical knowledge to solve situational problems and tests.
6-7	GPC-9	Epithelium. Glands.	Main morfofunctional and histogenetic characteristics of epithelial tissues. The structure of the exocrine glands.	Define and identify epithelial tissue in the preparations; explain the mechanisms of the secretory process in glandular epithelial cells.	Skills of microscopic examination and analysis of histological preparations.
8-9	GPC-9	Blood. Lymph.	Modern concepts of the blood	determine the forming elements	Skills of microscopic examination and analysis of

			system. differences in hematologic and leukogram, leukocyte formula. To comprehend the modern idea of the involvement of T and B lymphocytes in body's immune reaction.	in blood smear.	histological preparations.
10-12	GPC-9	Connective tissues	The morphological features of the structure and the ability to regenerate groups of connective tissue.	Identify the main structural components of fibrous connective tissue and tissue with special properties at microscopic level; identify and characterize the various types of connective tissues.	Skills of microscopic examination and analysis of histological preparations.
13-14	GPC-9	Skeletal tissues	The morphological features of the structure skeletal tissues. Features of the structure and location of different types of cartilage and bone tissues	Define the main structural components of cartilage and bone tissues at the microscopic level	Skills of microscopic examination and analysis of histological preparations.
15-16	GPC-9	Test "Epithelial tissue. Blood and lymph. Connective tissues "	All the studied theoretical material	define and differentiate the histological tissue structure in micropreparations	Skills of microscopic examination and analysis of histological preparations. Use theoretical knowledge to solve situational problems and tests.
17-18	GPC-9	Muscle tissue.	Classification and features of the structural organization of the muscle tissue; structural foundations of the mechanism of muscle contraction. structural features of different types of muscle tissue.	Compare the microscopic and ultra-microscopic data with functional state of the muscle fibers; explain the structural and functional features of different muscle groups.	Skills of microscopic examination and analysis of histological preparations.

19-20	GPC-9	Nervous tissue. Nerve cells. Neuroglia.	The morphological structure and functional properties of nerve cells and neuroglia.	determine the different types of neurons, glial morphological features at the microscopic level.	Skills of microscopic examination and analysis of histological preparations.
21-22	GPC-9	Nervous tissue. Nerve fibers. Nerve endings.	The structure, functional features of different types of nerve fibers and myelination process; microscopic, ultramicroscopic and functional features of the nerve endings.	distinguish myelinated and unmyelinated nerve fibers in slides, find and distinguish various types of nerve endings.	Skills and microscopic analysis of histological preparations
23-24	GPC-9	Nervous system. The peripheral nervous system. Sensory ganglia. Spinal cord. Autonomous (vegetative) nervous system.	Features of the morphological structure of the peripheral and central organs of the somatic and autonomic nervous system.	determine the structural elements of the central bodies of somatic and autonomic nervous system; explain simple and complex reflex pathways, typical for somatic and autonomic nervous system.	Skills and microscopic analysis of histological preparations
25-26	GPC-9	Nervoussystem . Brain.	Morphology of the cortex of the cerebral hemispheres and the cerebellar cortex; concept of cytoarchitectonics mieloarhitektonike and the cerebral cortex; granular and type of the smooth bark of the cerebral hemispheres.	Distinguish the layers and types of neurons; to determine the structural elements of the cortex of the cerebral hemispheres and the cerebellar cortex on microscopic level	Skills and microscopic analysis of histological preparations
27-28	GPC-9	Test on "Muscle tissue. Nervous tissue. Nervous system".	All the studied theoretical material	to define and differentiate the histological tissue structure in slides.	Skills and microscopic analysis of histological preparations. Use theoretical knowledge to solve situational tasks and tests.
29-30	GPC-9	Senses. The organ of	Classification of the senses on	determine microscopic	Skills and microscopic analysis of histological

		vision.	genetic and morphological and functional features; the main layers of the eye, features of their structure; the characteristic of eye's functional devices; neuronal structure of the retina.	structures constituting the cornea and the rear wall of the eye.	preparations
31-32	GPC-9	Senses. Hearing and balance organs.	Morphological and functional features of the cochlea; the structure of the vestibular apparatus of the inner-ear, morpho-functional characteristic of saccules and ampulas (мешочки и ампулы); the structure of the spiral (Corti) body.	Identify bone formations and their derivatives within the cochlear duct - three parts (tympani, membranous channel of the cochlea, the vestibular ladder; spiral (organ of Corti).	Skills and microscopic analysis of histological preparations
33-34	GPC-9	The cardiovascular system.	The general principle of the interdependence of the vessel wall structure and hemodynamic conditions; tissue composition of the walls of arteries and veins, blood vessels of the microvasculature; heart tissue and shell composition, Morphological and functional features of contractility and cardiac conduction system.	To determine the morphological differences between arteries and veins of muscular type, the structure of the microvasculature vessels at the microscopic level; determine the shell elastic arteries (the aorta), heart shell on microscopic level; conduct morphological differentiate typical and atypical cardiomyocytes microscope-agency level.	Skills and microscopic analysis of histological preparations
35-36	GPC-9	Test 3 on "Sense organs. Cardiovascular	All the studied theoretical material	to define and differentiate the histological tissue	Skills and microscopic analysis of histological preparations

		system"		structure in the slides.	
37-38	GPC-9	Organs of hematopoiesis and immune defense	general characteristics of hematopoiesis and their classification; structure, localization, especially post-embryonic hematopoiesis function of central and peripheral organs of hematopoiesis and immune defense.	Identify the structural components of hematopoiesis and immune defense at microscopic level.	Skills and microscopic analysis of histological preparations
39-40	GPC-9	Endocrine system.	Structural and functional characterization and classification of the endocrine system; Structure and function of neurosecretory nuclei of the hypothalamus, pituitary, adrenal, thyroid and parathyroid glands.	Determine endocrine organs and their components on microscopic level.	Skills and microscopic analysis of histological preparations
41-42	GPC-9	The skin and its derivatives.	General plan of structure and function of the skin; Derivatives skin: sweat and sebaceous glands, their structure, location, types of secretion; hair; Structural features of the skin and its derivatives in different topographical zones in relation to function.	to distinguish the constituent components of the skin on microscopic level; to find structures which build the hair in the product; to determine gland.	Skills and microscopic analysis of histological preparations
43-44	GPC-9	Respiratory system.	Anatomic, microscopic and ultramicroscopic structure of the respiratory system; the role of the	Determine the respiration organs at the microscopic level; explain the role of the structural	Skills and microscopic analysis of histological preparations

			structural components of the walls of the airways and respiratory department in the implementation of the respiratory functions of the lungs; structural elements of the air-blood barrier.	components of the walls of the airways and respiratory department in the implementation of the respiratory functions of the lungs; differentiate pneumatic components and respiratory lungs.	
45-46	GPC-9	Test on "Hematopoiesis' and immune defense's organs. Endocrine system. Skin and its derivatives. Respiratory system".	All the studied theoretical material	to define and differentiate the histological tissue structure in the slides.	Skills and microscopic analysis of histological preparations. Use theoretical knowledge to solve situational tasks and tests.
47-48	GPC-9	Digestive system. Front parts of the digestive system.	General plan of structure of the digestive tube; structure and functional significance of the tonsils, the major salivary glands, tongue.	Identify and differentiate the organs of the mouth on the microscopic level; findbodies in the preparations of the structure and determine their constituent components.	Skills and microscopic analysis of histological preparations
49-50	GPC-9	Digestive system. Esophagus. Stomach.	General plan of structure of organs' shells front and middle parts of the digestive tube, flax; particularly the esophagus structure; the structural features of the stomach wall, stomach glands.	determine relief structures and their tissue composition.	Skills and microscopic analysis of histological preparations
51-52	GPC-9	Digestive system. Intestines.	1Microscopic and ultramicroscopic structure and function of the small and large	Identify the different parts of the bowel, intestinal mucosa and tissue	Skills and microscopic analysis of histological preparations

			intestine; structural features of the various sections of the small intestine; structural features of the colon and appendix.	composition	
53- 54	GPC-9	Digestive system. Liver. Pancreas.	Microscopic and ultra-microscopic structure of large digestive glands; features of blood circulation in the liver; features of the structure and function of hepatocytes; the overall plan of the structure of the pancreas.	Identify the exocrine and endocrine pancreas in micro-preparations; determine the structures of liver in the preparation.	Skills and microscopic analysis of histological preparations
55- 56	GPC-9	Test "Digestive System"	All the studied theoretical material	to determine and differentiate histological tissue structure in micro-preparations.	Skills and microscopic analysis of histological preparations. Use theoretical knowledge to solve situational tasks and tests.
57	GPC-9	Urinary system	Structural and functional kidney, urinary bladder.		Skills and microscopic analysis of histological preparations
58	GPC-9	Male reproductive system.	Microscopic and ultra-microscopic structure of testis, prostate gland.	to determine and differentiate histological tissue structure in micro-preparations.	Skills and microscopic analysis of histological preparations
59	GPC-9	Female reproductive system.	Anatomic, microscopic and ultramicroscopic structure of ovary, uterus.		Skills and microscopic analysis of histological preparations
60	GPC-9	Test (on the topics: « Urinary system. Male reproductive system. Female reproductive system.»	All the studied theoretical material	to define and differentiate the histological tissue structure in the slides.	Skills and microscopic analysis of histological preparations. Use theoretical knowledge to solve situational tasks and tests.

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

Discipline «Histology,embryology,cytology» belongs to the basic part of the Block 1 of the GEF HE in the specialty 31.05.01 "Therapeutics".

4. The volume of discipline

№ № p/p	Type of work	Total credit units	Hours	Semesters	
				II	III
				Hours	Hours
1	2	3	4	5	6
1	Contact work of students with an instructor (total), including:		156	90	60
2	Lectures (L)		36	18	18
3	Clinical practical classes (CPC)		120	72	48
4	Seminars (s)	-	-	-	-
5	Laboratory works (LW)	-	-	-	-
6	Individual work of student (IWS)		60	36	24
7	Type of interim assessment	credit (C)	-	-	-
		examination (E)	1	36	36
8	TOTAL: Total labor	Hours		252	126
		ZET	7	7	3,5

5. Content of discipline

№/ п	№ semest er	Name of topic (section) discipline	Learning activities (Hours)					Forms of ongoing performance control
			L	L W	CP C	IW S	total	
1	2	3	4	5	6	7	8	9
2	2	Cytology	2	—	10	1	13	1-4 - quiz, test, tasks 5 – test (written quiz, testing, diagnostics micropreparations)
3	2	General histology	12	—	34	23	69	6-14, 17-22 - quiz, test, tasks 15-16- test (written quiz, testing, diagnostics micropreparations)
4	2-3	Private histology	22	—	76	36	134	23-26, 29-34, 37-44, 47-54, 57-59 - quiz, test, tasks 27-28, 35-36, 45-46, 60- test (written quiz, testing, diagnostics micropreparations)
5	3	Examination			36		36	
TOTAL:			36	—	156	60	252	

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

№/p	№ semester	Name of educational-methodical development
1.	2	AkoevaL.A., Gireyeva L.A.,Tabolova L.S. Blood and blood formationBlood and blood formation, 2005
2.	3	AkoevaL.A..GireyevaL.A..TabolovaL.S. Anatomical and physiological features of blood and respiratory organs in children 2005
3.	3	AkoevaL.A..GireyevaL.A..TabolovaL.S. The immune system and immune cells, 2006
4.	2-3	AkoevaL.A..GireyevaL.A..TabolovaL.S. Toolkit for students to practical classes in histology Part 1 2008
5.	3	Akoeva L.A.,GireyevaL.A..Tabolova L.S. Toolkit for students to practical classes in histology of the 2. 2008
6.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S.Workbook for histology, cytology, embriologii.ch.1. 2008
7.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S.Workbook for histology, cytology, embriologii.ch.2. 2008
8.	2	AkoevaL.A..GireyevaL.A..TabolovaL.S.Workbook for histology, cytology, embriologii.ch.1. 2009
9.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S.Guidelines for the implementation of self-vneuditornoy work of students for practical classes in histology. 2009
10.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guide for practical classes in histology for students medical, pediatric, medical-prophylactic faculty (EMA). 2009
11.	2	AkoevaL.A..GireyevaL.A..TabolovaL.S.Guidelines for the implementation of an independent extracurricular CDS on histology (1 semester), 2010
12.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guidelines for the implementation of the CDS by histology (semester 2), 2010
13.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guidelines for the CDS on histology course 1, 2010
14.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Guidelines for the CDS 1 year medical, pediatric, FPM faculties, 2010
15.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Methodical development "autonomic nervous system" for the implementation of the CDS for the 1st year students 2010
16.	2	AkoevaL.A..GireyevaL.A..TabolovaL.S.Methodical development for the implementation of the CDS by histology Part 1 2010
17.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Methodical development for the implementation of the CDS by histology Part 2 2010
18.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of medical, pediatric, medical-preventive and dental faculties. 2011
19.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Tool Age histology. Blood. Organs of hematopoiesis. Bodies of circulation for students medical, pediatric, medical-preventive and dental faculties. 2011
20.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Tool Age histology. Respiratory system. Respiratory students medical, pediatric, medical-preventive and dental faculties. 2011
21.	2	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and

		students' independent work 1 year medical faculty (Part I), 2012
22.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work 2 courses of medical faculty (part II), 2012
23.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of the medical faculty, part 1, 2. 2013
24.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of the medical faculty, part 1, 2. 2014
25.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students of medical, pediatric, medical-preventive and dental faculties "endocrine system. The central regulatory formation of the endocrine system. Age-related changes "2014
26.	2-3	AkoevaL.A..GireyevaL.A..TabolovaL.S.Workbook for practical classes and students' independent work of the medical faculty, part 1, 2. 2015
27.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students of medical, pediatric, medical-preventive and dental faculties "Age histology. Morpho-functional features large digestive glands ", 2015
28.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students of medical, pediatric, medical-preventive and dental faculties "Age histology. Endocrine system. Morphology and function of peripheral glands", 2015
29.	2-3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Workbook for practical classes and students' independent work of the medical faculty, part 1, 2. 2016
30.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students medical, pediatric, medical-preventive and dental faculties "Age histology. Morphological and functional features of the digestive process, "2016
31.	3	AkoevaL.A..GireyevaL.A..Tabolova L.S. Textbook of histology for students medical, pediatric, medical-preventive and dental faculties "Age histology. Morphological and functional features of the middle portion of the digestive system. Stomach ", 2016

7. Fund assessment tools for interim assessment of students on discipline

№/ p	The list of competencies	№ semester	Indicator of assessment	The criterion of evaluation	Scale of assessment	Name and of assessment tools
1	2	3	4	5	6	7
	GPC-9	2-3	See standard of education quality assessment, approved by order of the rector of North-Ossetian State Medical Academy of 10.07.2018 №264/o	See standard of education quality assessment, approved by order of the rector of North-Ossetian State Medical Academy of 10.07.2018 №264/o	See standard of education quality assessment, approved by order of the rector of North-Ossetian State Medical Academy 10.07.2018 №264/o	exam cards, standards of test items, cards on practical skills

8. A list of the basic and additional educational literature necessary for the development of the discipline

п/ №	Name	Author (s)	Year, place of publication	Number of copies	
				at library	at departm ent
1	2	3	4	5	6
Main literature					
1.	Wheater's functional histology : a text and colour atlas	B.Young, G.O'Dowd, P. Woodford	Churchill livingstoneelsevier, 2014	43	
2.	Cell biology	Thomas D.Pollard et al.	Philadelphia : Elsevier, Book aid international, 2017	50	
Additional literature					
3.	Атлас гистологии : атлас	ред У.Велш	М-ГЭОТАР-Медиа, 2011	2	
4.	Histology and cell biology	Kurt E. Johnson	Baltimore : Williams & Wilkins, 1991	1	
5.	Color atlas of histology	Gartner L., Hiatt J.	Baltimore : Williams & Wilkins, 1990	1	
6.	Terminologia Histologica. Международные термины по цитологии и гистологии человека с официальным списком русских эквивалентов	ред. В.В. Банин	М.:ГЭОТАР-Медиа, 2009	1	
7.	Terminologia Embryologica. Международные термины по эмбриологии человека с официальным списком русских эквивалентов	Колесников Л.Л.	М.:ГЭОТАР-Медиа, 2014.	«Консультант студента» http://www.studmedlib.ru/book/ISBN9785970430804.html	

9. The list of resource information and telecommunication network "Internet", necessary for the development of discipline

<http://donhist.narod.ru/resurs.htm> Educational Web Resources by histology, cytology and embryology

http://www.meddean.luc.edu/lumen/MedEd/Histo/frames/histo_frames.html- Histology, atlas for self-study and self-medication

<http://www.meddean.luc.edu/lumen/MedEd/Histo/virtualhistology.htm>- это virtual histology, virtual histology atlas for independent analysis of the drug

<http://books-up.ru/pdfreader/2-245506> Guide histology v.2

www.histology.narod.ru – course practical classes in histology and embryology

<http://humbio.ru/> - Course knowledge base of human biology, cell biology and reproduction and development

<http://hist.yma.ac.ru/index.html> - (<http://hist.yma.ac.ru/mr/mr00.htm>) Forums to control the acquired knowledge of histology

<http://www.histology.narod.ru/lectures.htm> lectures on histology

<http://www.histol.chuvashia.com/atlas/atlas-enter-ru.htm> atlas of micrographs Gunina

<http://nsau.edu.ru/images/vetfac/images/ebooks/histology/> contains 2 electronic book: Guide-Atlas of Histology, Cytology and Embryology (with the application "Exam") - SL Kuznetsov, NN Mushkambarov VL Goryachkina and tests in histology, cytology and embryology (for self-control) NN Mushkambarov, SL Kuznetsov

<http://meduniver.com/Medical/Book/19.html> e-books on histology on various sections of histology

<http://www.morphology.dp.ua/mp3/intro.php> video lectures on histology allow the use of remote forms of training histology.

<http://cytohistology.ru/> - video lectures (and textual material) Histology includes cytology, histology, and all sections of the case studies

«Консультант студента» www.studmedlib.ru/ru/book/ISBN9785970421307.html Histology, embryology, cytology. Under red..E.G.Ulumbekova, M-GEOTAR- Media 2012

«student Consultant» www.studmedlib.ru/ru/book/ISBN9785970426746.html Histology, Cytology, Embryology: satin Under red..S.L.Kuznetsova. M. GEOTA - Media 2013

«Консультант студента» www.studmedlib.ru/ru/book/ISBN978529004212.html histology Guide Volume 1, Ed. R.K.Danilova. SPb.: Spets.lit 2011

student Consultant www.studmedlib.ru/ru/book/ISBN9785299004311.html Histology Manual Volume 2, Ed. R.K.Danilova. SPb.: Spets.lit 2011

student Consultant» www.studmedlib.ru/ru/book/ISBN97859704238468.html Histology. Diagrams, tables and case studies on the histology of the private person. SY Vinogradov et al M.GEOTAR -. Media 2012.

10. Guidelines for students to develop the discipline

The education consists of classroom training (120) and individual work (60 hours.) The main study time is allocated to practical work on the study of microscopic preparations, electron micrographs, the decision of test tasks and situational problems with clinical orientation. Working with educational literature it is regarded as a kind of academic work in the discipline and executed within hours devoted to its study. Each student has access to the library collections of the department and Academy.

In accordance with the requirements of the GEF inside discipline "Histology, embryology, cytology" marked sections: 1. History of the development of histology, cytology and embryology; 2. Tissue engineering; 3. Cytology; 4. General histology; 5. Private histology; 6. Embryology (Variation part). Each section is divided into topics. At the same themes and topics in the sections are constructed in such a way as to ensure a continuous chain of information in which each subsequent topic is based on the information platform set up in the study of the previous threads. Each topic is given a certain number of hours divided into lectures, practical classes and control.

Methodically practical training consists of three interconnected structural units: communication with the student, monitoring the level of knowledge and independent work of the student.

In the process of communication with the student teacher checks the basic knowledge of students - using additional teaching aids (films, computer presentations, manuals, etc.) gives them more information. Individual work of students includes a study and sketch histological preparations, topical solution of situational problems, test tasks and others. Current control of knowledge assimilation. It consists of the control of knowledge of the histological structure of the studied tissues and organs, the ability to show their structural elements in the histological preparation, control solutions of situational problems and test tasks.

At the end of each section students have control test and diagnostics of histological preparations. At the end of the third semester final control is carried out in the form of examination. The exam consists of three stages, including the test control, control of practical skills (the ability to read histologic and electron micrographs) and an interview on the thematic of situational problems with clinical orientation.

Knowledge control is carried out on the basis of score-rating system.

Students' work in a group creates a sense of community and sociability.

Individual work with histological preparations contributes to a deontological behavior, neatness, discipline.

Individual work with literature, writing essays, preparation of reports (reporting) forms the ability to analyze the health and social problems, the ability to use in practice the achievements of the natural sciences, medico-biological and clinical sciences in various kinds of professional and social activities.

Different types of training activities, including independent work of students, promote the mastery of culture of thinking ability in written and spoken language is logically correct to issue its results; readily to the formation of a systematic approach to the analysis of health information, the perception of innovation; forming ability and willingness to self-improvement, self-fulfillment, personal and objective reflection.

Different types of training activities form ability in terms of science and practice to the reevaluation of experience, analysis of its features, the ability to acquire new knowledge, use different forms of training, information and education technology.

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

- Microsoft word
- Microsoft excel
- Microsoft Power Point
- Adobe photoshop
- Adobe Acrobat
- Adobe Finereader

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

Department of biology and histology (histology) is located in the building number 2, on the fifth floor. Includes 5 classrooms (the area of which is as follows: 16.8 m², 16.6 m², 16.8 m², 16.9 m², 18.2 m²), senior lecturer of the department's office (17.1 m² area), methodical cabinet (an area of 17.2 m²), assistant (area of 17.2 m²), laboratory (area of 16.9 m²), material room (area of 17.3 m²), lounge (46.4 m² area). The total area of the premises is 219.2 m².

Training rooms have 18 working places for students, chalkboard. At the working places students have individual lights, microscopes available, a full set micropreparations.

№/ p	Name of equipment	number	Technical condition
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1	2	3	4
Specialequipment			
	Microscope, number .	41	satisfactory
	Multimedia Complex (laptop, projector, screen)	2	
	TV-set	2	
	videorecorder	1	
	Computer	3	
Phantoms			
	—	—	—
Fake			
	Histologicalslidesare	650	satisfactory
	tables	100	satisfactory
	Multimediapresentations	25	

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 on-line mode both in synchronous and asynchronous modes. Seminars can be conducted in the form of web conferences.