

AMENDMENTS AND CHANGES TO THE CURRICULUM IN THE EDUCATIONAL DISCIPLINE «MEDICAL BIOLOGY AND GENERAL GENETICS » for the specialty 7-07-0911-01 «General Medicine»

for 2024/2025 academic year

Amendments and changes	Basis/Reason
1. Changes have been introduced into the Explanatory Note (appendix 1)	Educational Plan for 2024/2025 academic year
2. Changes have been introduced into the Thematic Plan (appendix 2)	Educational Plan for 2024/2025 academic year
3. Changes have been introduced into the Educational Discipline Curricular Chart (appendix 3)	Educational Plan for 2024/2025 academic year
4. Changes have been introduced into the list of practical skills (appendix 4)	Department meeting 31.05.2024 #11
5. The topic «Genomics DNA analysis methods» is supplemented with the following: - the probable cause of the species-specific teratogenic effect of thalidomide was identified using amino acid sequence alignment of the protein target and molecular modeling methods; - HIV immune resistance and the problems of creating an effective vaccine against the virus. The content of the topic "Genetic Engineering" is supplemented with the following data: - methods of regenerative medicine with application of bioengineered constructs for replacement of damaged human organs and tissues.	Acts of implementation of the results of scientific research in the educational process

The curriculum is revised and approved at the meeting of Biology Department (protocol # 11 of 31.05.2024)

Head of the department of Biology



V.V. Davydov

APPROVED

Dean of the The Medical Faculty for International Students



O.S. Ishutin

Changes in the Explanatory Note

Total number of hours for the study of the discipline is 216 academic hours, of which 85 classroom hours and 131 hours of student independent work. Classroom hours according to the types of studies: lectures - 15 hours (including 3 hours of supervised student independent work (SSIW)), laboratory classes (practical classes - 70 hours).

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	semester	Number of academic hours						Form of intermediate assessment
		total	in-class	including			out-of-class self-studies	
				lectures	supervised student independent work	laboratory studies (practical classes and seminars)		
7-07-0911-01 «General Medicine»	1	108	45	6	3	36	63	credit
	2	108	40	6	0	34	68	examination

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures (incl. SSIW)	practical (laboratory or seminars)
1. Molecular and cell Biology	6	20
1.1 Medical Biology as a science, its role in the training of a doctor. Subject, tasks and methods of cytology	-	2
1.2 Structural and functional organization of the cell	-	2
1.3 Structural and functional organization of genome	-	2
1.4 Cell cycle	-	2
1.5 The central dogma of molecular biology	1,5	2
1.6 Regulation of gene expression in prokaryotes and eukaryotes	1,5	2
1.7 Genomics. Methods of DNA analysis	-	2
1.8. Genetic Engineering	1,5	2
1.9. Omics Technologies. Molecular genetic methods in science and medicine	1,5	4
2. General and Medical Genetics	3	16
2.1 Basic laws of inheritance. Gene interactions	-	2
2.2. Genetic linkage. Biology and genetics of sex	-	2
2.3. Variability. Mutagenesis. Carcinogenesis	1,5	2
2.4 Population genetics	-	2
2.5 Human genetics	1,5	2
2.6. Hereditary disorders	-	2
2.7. Genetic counseling. Prenatal diagnostics	-	4
4. Medical parasitology	1,5	26
4.1 General parasitology	1,5	2
4.2 Medical protistology	-	4
4.3 Medical helminthology	-	8
4.4 Medical arachnoentomology	-	10
4.5 Poisonous and venomous organisms	-	2
3. Developmental biology	4,5	8
3.1 Reproduction of living matter	1,5	2
3.2 Fundamentals of ontogenesis in mammals and humans	-	4
3.3 Homeostasis and Chronobiology	1,5	-
3.4 Biological basis of regeneration and transplantation	-	2
3.5 Evolution of organ systems	1,5	-
Total number of hours	15	70

ACADEMIC DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	Number of hours			Supervised student work	Practical skills	Form of control	
		lectures	practical (laboratory or seminars)	hours			of practical skills	of current / intermediate assessment
1 semester								
		Lectures						
1.	Molecular and cell Biology	6	-		3			
1.5	The central dogma of molecular biology							Reports, electronic tests, conference reports, publication of articles, reports
1.6	Gene expression. Epigenetics	1,5						Reports, electronic tests, conference reports, publication of articles, reports
1.8	Genetic Engineering	1,5						Reports, electronic tests, conference reports, publication of articles, reports
1.9	Postgenomic Medicine	1,5						Reports, electronic tests, conference reports, publication of articles, reports
2.	General and Medical Genetics	1,5						Reports, electronic tests, conference reports, publication of articles, reports

2.3	Mutagenesis. Carcinogenesis							Reports, electronic tests, conference reports, publication of articles, reports
2.5	Human genetics					1,5		Reports, electronic tests, conference reports, publication of articles, reports
						1,5		
				6		3		
	Practical (laboratory) lessons							
1.	1. Molecular and cell Biology				20			
1.1	Medical Biology as a science, its role in the training of a doctor. Subject, tasks and methods of cytology			2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.2	Structural and functional organization of the cell			2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.3	Structural and functional organization of genome			2			Analyzing human idiograms	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.4	Cell cycle			2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.5	The central dogma of molecular biology			2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense

1.6	Regulation of gene expression in prokaryotes and eukaryotes				2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.7	Genomics. Methods of DNA analysis				2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.8.	Genetic Engineering				2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
1.9	Omics Technologies. Molecular genetic methods in science and medicine				2		Solving problems in molecular biology	Control work*	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Colloquium in Molecular Biology				2				Electronic test*
2.	General and Medical Genetics				16				
2.1	Basic laws of inheritance. Gene interactions				2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
2.2	Genetic linkage. Biology and genetics of sex				2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
2.3	Variability. Mutagenesis. Carcinogenesis				2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense

2.4	Population genetics			2				defense Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
2.5	Human genetics			2		Analysis of pedigrees	Laboratory work	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
2.6	Hereditary disorders			2		Solving problems in general and medical genetics	Control work*	Interview, test, reports, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
2.7	Genetic counseling. Prenatal diagnostics			2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Colloquium in Molecular Biology and Genetics			2				Electronic test* Credit
		6		36				
2 semester								
	Lectures	6		-				
4.	Medical parasitology	1,5						
4.1	Ecological parasitology							Reports, electronic tests, conference reports, publication of articles, reports
		1,5						
3.	Developmental biology	3,5						
3.1	Reproduction of living matter	1,5						Reports, electronic tests, conference reports, publication of articles, reports

3.2	Biological basis of regeneration and transplantation	1,5					Reports, electronic tests, conference reports, publication of articles, reports
3.3	Evolution of organ systems	1,5					Reports, electronic tests, conference reports, publication of articles, reports
		6					
	Practical (laboratory) lessons						
4.	Medical parasitology		26				
4.1	Medical parasitology		2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
4.2	Medical protistology Medical protistology I. Phylum Apicomplexa, Class Sporozoa		2			Diagnosis of parasitological micropreparations	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Medical protistology II. Phylum <i>Sarcomastigophora</i> , Class <i>Sarcodina</i> , Class <i>Zoomastigota</i> . Phylum <i>Infusoria</i> , Class <i>Ciliata</i>		2			Diagnosis of parasitological micropreparations	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
4.3	Medical helminthology Medical helminthology I. Phylum <i>Plathelminthes</i> , Class <i>Trematoda</i>		2			Diagnosis of parasitological micropreparations	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Medical helminthology II. Phylum <i>Plathelminthes</i> , Class <i>Cestoda</i>		2			Diagnosis of parasitological micropreparations	Interview, test, accounts of laboratory classes with oral defense, accounts of

	Medical helminthology III. Phylum <i>Nemathelminthes</i> , Class <i>Nematoda 1</i>		2		Diagnosis of parasitological micropreparations	Laboratory work	practical exercises with oral defense Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Medical helminthology IV. Phylum <i>Nemathelminthes</i> , Class <i>Nematoda 2</i>		2		Diagnosis of parasitological micropreparations	Laboratory work	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
4.4	Medical arachnoentomology						
	Medical arachnoentomology I. Phylum <i>Arthropoda</i> , Class <i>Arachnida</i>		2		Diagnosis of parasitological micropreparations	Laboratory work	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Medical arachnoentomology II. Phylum <i>Arthropoda</i> , Class <i>Insecta 1</i>		2		Diagnosis of parasitological micropreparations	Laboratory work	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Medical arachnoentomology III. Phylum <i>Arthropoda</i> , Class <i>Insecta 2</i>		2		Diagnosis of parasitological micropreparations	Laboratory work	Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Diagnosis of parasitic micropreparations		2		Work with optical devices (magnifying glass, light microscope); Diagnosis of parasitological micropreparations	Laboratory work*	Inclusion of tasks in assignments for the final class (electronic test)*

Colloquium in Parasitology			2		Solving case problems in parasitology	Control work*	Electronic test*
4.5	Poisonous and venomous organisms		2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
3.	Developmental Biology		8				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
3.1.	Reproduction of living matter		2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
3.2.	Fundamentals of ontogenesis in mammals and humans Fundamentals of ontogenesis in mammals and humans I. Prenatal development		2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
	Fundamentals of ontogenesis in mammals and humans II. Postnatal development		2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
3.3	Biological basis of regeneration and transplantation		2				Interview, test, accounts of laboratory classes with oral defense, accounts of practical exercises with oral defense
		6	34				Examination
		12	70				

APPROVED

Head of the working group for
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LIST OF PRACTICAL SKILLS IN THE EDUCATIONAL DISCIPLINE
«Medical Biology and General Genetics»
FOR THE SPECIALTY 7-07-0911-01 «General Medicine»

Practical skill	Form of control
Work with optical devices (magnifying glass, light microscope)	Laboratory work
Solving problems in molecular biology	Control work
Analysis of pedigrees	Laboratory work
Analyzing human idiograms	Laboratory work
Solving problems in general and medical genetics	Control work
Solving case problems in parasitology	Control work
Diagnosis of parasitological micropreparations	Inclusion of tasks in assignments for the final class