

Документ подписан простой электронной подписью
 Информация о владельце:
 ФИО: Ливанов Дмитрий Викторович
 Должность: Ректор
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 Vice Rector for Academic Affairs
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 A. A. Voronov

Ministry of Science and Higher Education of the Russian Federation
 The Federal State Autonomous Educational Institution of Higher Education
 "Moscow Institute of Physics and Technology (National Research University)"

Qualification Master
 Year of enrollment 2023
 Statutory duration of a study course 2 years

ACADEMIC PLAN

Domain of study: 19.04.01 - Biotechnology
 Orientation (specialty): Medical Biotechnology/Медицинская биотехнология
 Phystech School of Biological and Medical Physics
 Center for educational programs in bioinformatics

AGREED
 Head of the Phystech School of Biological and Medical
 Physics D. V. Kuzmin

№ in order	Name of disciplines, practices, State Final Examination	Form of final control by semesters			Hours								Coursework and test papers	hours in week								TOTAL HOURS	Credit points			
		Examination	Graded test ("-" - simple)			State Examination	Laboratory classes	of them						Hours for preparation and examinations	Distribution by courses and semesters								Total	Basic	Elective	
			1	2	3			4	1	2	3	4			6	7	8	9	10	11	12					13
		1	2	3	4	1	2	3	4	6	7	8		9	10	11	12	13	14	1 sem. 15 weeks			2 sem. 15 weeks		3 sem. 15 weeks	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22					
M.1	Courses (Modules)/Дисциплины (модули)					1 815	765	360	120	285		1 050	300					2 115	47	9	38					
M.1.1	Foreign Languages/Иностранные языки					180	120			120		60		4				180	4	4						
				-1		90	60			60		30		2	4			90	2	2						
				2		90	60			60		30		2		4		90	2	2						
	Humanitarian and Social Cycle/Гуманитарный и социальный цикл					165	60	60				105	60	4				225	5	5						
M.1.2	Global Trends and Methods for Strategic Development in the Era of Uncertainty/Глобальные тренды и методы стратегического развития в эпоху неопределенности	1				60	30	30				30	30	2	2			90	2	2						
M.1.3	Digital Transformation: Social and Economic Challenges/Цифровая трансформация: социальные и экономические вызовы		2			105	30	30				75	30	2		2		135	3	3						
	Core science/Профильные дисциплины					1 470	585	300	120	165		885	240	6				1 710	38	38						
M.1.B.1	Theory of Probability/Теория вероятностей	1				105	60	30		30		45	30	2	2			135	3	3						
M.1.B.2	Basic Biostatistics/Базовая биостатистика		3			60	30			30		30				2		90	2	2						
M.1.B.3	Introduction to Molecular Biology and Genetics/Введение в молекулярную биологию и генетику	1				105	30	30				75	30	2				135	3	3						
M.1.B.4	Python Programming/Программирование на языке Python			1		135	45	15	30			90		2	1	2		135	3	3						
M.1.B.5	Genetic and Genomic Engineering/Генная и геномная инженерия			2		90	15			15		75				1		90	2	2						
M.1.B.6	Cancer and Molecular Cell Biology/Рак и молекулярно-клеточная биология			2		150	60	60				90	30	4				180	4	4						
			3			90	30	30				60		2		2		90	2	2						
						60	30	30				30	30	2			2	90	2	2						
M.1.B.7	Cell Technology/Клеточные технологии			1		180	90	30	60			90			2	4		180	4	4						
M.1.B.8	Molecular and Cell Biology/Молекулярная и клеточная биология	1				105	30			30		75	30			2		135	3	3						
M.1.B.9	Medicinal Chemistry: fundamental concepts and modern approaches/Медицинская химия: фундаментальные концепции и современные подходы		3			60	30	30				30	30				2	90	2	2						
M.1.B.10	Microbiology and Metagenomics/Микробиология и метаболитика			2		90	30	30				60				2		90	2	2						
M.1.B.11	Physico-chemical Biology of Proteins: from Structure to Function and Biomedical Application/Физико-химическая биология белков: от структуры к функции и биомедицинскому применению		2			105	30			30		75	30			2		135	3	3						
M.1.B.12	Bioorganic Chemistry/Биоорганическая химия	1				195	90	30	30	30		105	30		2	2	2	225	5	5						
M.1.B.13	Immunology/Иммунология			3		45	30	30				15					2	45	1	1						

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		Examination				Graded test ("-" - simple)				State Examination	Laboratory classes	of them					Hours for preparation and examinations	Coursework and test papers	Distribution by courses and semesters							TOTAL HOURS	Total	Basic	Elective		
		1		2		3		4				Total classroom sessions	Lectons	Laboratory classes	Practical lessons, seminars, exercises, etc.	Practice			Independent study	1 course			2 course								
		1	2	3	4	1	2	3	4											lect	lab.	sem	lect	lab.	sem					lect	lab.
		1	2	3	4	1	2	3	4	6	7	8	9	10	11	12	13	15	16	17	18	19	20	21	22						
	Elective Set of Courses 1/Блок дисциплин по выбору 1									45	15	15				30												45	1	1	
M.1.B.14	Tissue Engineering/Тканевая инженерия						2		45	15	15				30			1									45	1	1		
M.1.B.15	Neurophysiology and Cognitive Sciences/Нейрофизиологию и когнитивные науки						2		45	15					30												45	1	1		
M.2	Practice/Практика								3 015					3 015													3 015	67	67		
M.2.1	Industrial Practice/Производственная практика								3 015					3 015													3 015	67	67		
M.2.1.1	Personal Research Project/Научно-исследовательская работа								3 015					3 015													3 015	67	67		
							2		720					720													720	16	16		
							3		1 125					1 125													1 125	25	25		
							4		1 170					1 170													1 170	26	26		
M.3	State Final Certification/Государственная итоговая аттестация								240					240	30												270	6	6		
M.3.1	Performance of and Defence of Graduation Thesis/Выполнение и защита выпускной квалификационной работы						4		240					240	30												270	6	6		
TOTAL:		Number of examinations and pass/fail tests								Distribution of hours by type of lesson							Distribution of classroom hours per week by semester							Total hours	Total number of credits						
		Examinations				Pass/Fail tests				Obl.																					
		5	2	3		3	6	2	1	ECs.	5 070	765	360	120	285	3 015	1 290	330	14	29	14	8		5 400	120	82	38				
	Fixed (without State Final Examination)																														
	Extracurriculars																														
	State Final Examination				1																										
										Distribution of hours of contact work by years and semesters							Total hours														
										751							206														
										482							269	172	34	957											
										Distribution of credits by years and semesters																					
										56							64														
										25							31	32	32												

И.о. начальника учебного управления Т. Ф. Artemenko