

Документ подписан простой электронной подписью  
 Информация о владельце:  
 ФИО: Ливанов Дмитрий Викторович  
 Должность: Ректор  
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 Vice Rector for Academic Affairs  
 c6d909c49c1d2154fa5a0156c4eaa51e7252a3a2  
 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: 03.04.01 - Applied Mathematics and Physics  
 Orientation (specialty): Applied Bioinformatics/Прикладная биоинформатика  
 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)			Laboratory classes	of them					Hours for preparation and examinations	Distribution by courses and semesters								Total	Basic		Elective					
			State Examination				Laboratory classes	Total classroom sessions	Lectures	Laboratory classes	Practical lessons, seminars, exercises, etc.		Practice		Independent study	1 course				2 course									
		1	2	3	4	1						2				3	4	5	6	7	8	9		10	11	12	13	14	1 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	<b>Courses (Modules)/Дисциплины (модули)</b>					1 425	660	360		300		765	240	8				1 665	37	15	22								
M.1.1	<b>Foreign Languages/Иностранные языки</b>					180	120			120		60		4				180	4	4									
						90	60			60		30		2	4		90	2	2										
						90	60			60		30		2		4	90	2	2										
	<b>Humanitarian and Social Cycle/Гуманитарный и социальный цикл</b>					165	60	60				105	60	4				225	5	5									
M.1.2	(N)ever the Same Phystech: History and Culture of MIPIT from Ancient Times to the Present Day/(Не) тот Физтех: история и культура МФТИ с незапамятных времен до	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										
M.1.4	<b>Core science/Профильные дисциплины</b>					1 080	480	300		180		600	180				1 260	28	6	22									
M.1.4	Basic Biostatistics/Базовая биостатистика	1				105	60	30		30		45	30	2	2		135	3	3										
M.1.5	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.1	Data Visualization/Визуализация данных		2			105	45	30		15		60	30			2	1	135	3	3	3								
M.1.B.2	Microbiology and Metagenomics/Микробиология и метагенетика			2		90	30	30				60				2		90	2	2									
M.1.B.3	Machine Learning in Biology/Машинное обучение в			1		90	30	15		15		60		1	1		90	2	2	2									
M.1.B.4	NGS Data Analysis/Анализ данных NGS		2			60	30	15		15		30	30			1	1	90	2	2	2								
M.1.B.5	Transcriptomics, Epigenomics and OMICS Data Analysis/Транскриптомика, эпигеномика и анализ ОМИКСных данных			2		90	30	30				60				2		90	2	2	2								
M.1.B.6	Algorithms of Bioinformatics/Алгоритмы биоинформатики			1		90	45	30		15		45		2	1		90	2	2	2									
M.1.B.7	Data Structures and Algorithms/Структуры данных и алгоритмы			1		135	60	60				75		4			135	3	3	3									
M.1.B.8	Analysis of OMICS Data/Анализ омиксных данных		2			60	30			30		30	30			2		90	2	2	2								
M.1.B.9	Deep Learning in Biology/Глубокое обучение в биологии		2			105	60	30		30		45	30			2	2	135	3	3	3								
	<b>Elective Set of Courses 1/Блок дисциплин по выбору 1</b>					45	30			30		15					45	1	1	1									
M.1.B.10	Genetic and Genomic Engineering/Генная и геномная инженерия			2		45	30			30		15				2		45	1	1	1								
M.1.B.11	Cancer and Molecular Cell Biology/Рак и молекулярно-клеточная биология			2		45	30					15					45	1	1	1									
M.2	<b>Practice/Практика</b>					3 375						3 375					3 375	75	75										
M.2.1	<b>Industrial Practice/Производственная практика</b>					3 375						3 375					3 375	75	75										
M.2.1.1	Personal Research Project/Научно-исследовательская работа					3 375						3 375					3 375	75	75										
						540						540					540	12	12										

№ 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	Total	Basic	Elective							
												Laboratory classes	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												1 sem. 15 weeks	2 sem. 15 weeks	3 sem. 15 weeks	4 sem. 15 weeks	1 sem. 15 weeks						2 sem. 15 weeks	3 sem. 15 weeks	4 sem. 15 weeks				
1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	lect	lab.	sem	lect	lab.	sem	lect	lab.	sem	lect	lab.	sem	15	16	17	18	19	20	21	22
										540					540																						
										1 080					1 080																						
										1 215					1 215																						
M.3	State Final Certification/Государственная итоговая аттестация									330					330	30																					
M.3.1	Performance of and Defence of Graduation Thesis/Выполнение и защита выпускной квалификационной								4								4																				
Ф.1	Elective Subjects/Факультативы									240	135	60			75	105	30																				
Ф.1.B.1	Theory of Probability/Теория вероятностей									90	60	30			30	30																					
Ф.1.B.2	Game Theory/Теория игр	1								150	75	30			45	75	30		2		2																
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											
	Fixed (without State Final Examination)	3	5							Obl.	5 130	660	360			300	3 375	1 095	270	8	21		23														
	Extracurriculars	1								ECs.	240	135	60			75	105	30		9																	
	State Final Examination								1																												
														Distribution of hours of contact work by years and semesters								Total hours															
														947				59				1 006															
														528	419	25	34																				
														61				59																			
														29	32	24	35																				

Acting Head of Academic Management Office T.F. Artemenko