



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 01.04.02 Applied Mathematics and Informatics
 Educational Programme "Computational Biology and Bioinformatics"
 Trajectories: "Bioinformatics"

APPROVED
 12.05.2023
 Vice Rector
 ROSHCHIN S.Y.
 Signed with EDS

Implementing unit: St. Petersburg School of Mathematics, Physics and Computer Science, HSE, HSE - Saint Petersburg

Years of Study: 2023/2024 - 2024/2025

Length of Programme: 2 years

Mode of Study: Full Time

Degree: Master's degree / MBA

Block Code	Course	Subject type	Credits	Credits by Years		Planned Educational Programme Development Results
				1	2	
	Degree Programme		120,00	60,00	60,00	
	Bioinformatics (Applied track)		120,00	60,00	60,00	
	Key Seminars		18,00	6,00	12,00	
1	Mentor's Seminar	C	9,00	3,00	6,00	GPC-1.AMI, PC-1, PC-2, PC-5, UC-1, UC-2, UC-3, UC-5
2	Research Seminar "Journal Club"	C	3,00	3,00		PC-4, UC-1
3	Research seminar "Structural bioinformatics and molecular dynamics"	C	6,00		6,00	GPC-3.AMI, GPC-4.AMI, PC-10, PC-5, PC-9, UC-1, UC-6
	Internship		24,00	3,00	21,00	
	Project Internship		24,00	3,00	21,00	
1	Project	C	3,00	3,00		GPC-3.AMI, PC-1, PC-2, PC-6, PC-9, UC-2, UC-3, UC-5
2	Preparation of final qualification paper	C	21,00		21,00	GPC-1.AMI, PC-5, UC-1, UC-4
	Major		66,00	48,00	18,00	
	Major (8 out of 8) (48)		48,00	48,00		
1	Algorithms in Bioinformatics	C	6,00	6,00		GPC-2.AMI, GPC-3.AMI, GPC-4.AMI, PC-10, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-4, UC-6
2	Machine Learning	C	6,00	6,00		GPC-2.AMI, GPC-3.AMI, GPC-4.AMI, PC-3, PC-5, PC-6, PC-8, UC-1, UC-2
3	Molecular Biology and Biotechnology	C	9,00	9,00		GPC-1.AMI, GPC-2.AMI, PC-10, PC-6, PC-9, UC-2, UC-4, UC-5, UC-6

4	Systemic Pharmacology	C	3,00	3,00		GPC-3.AMI, PC-10, PC-8, PC-9, UC-4, UC-6
5	Higher Mathematics and Mathematical Statistics	C	6,00	6,00		GPC-1.AMI, PC-10, UC-1
6	Unix and scripting languages	C	6,00	6,00		GPC-3.AMI, GPC-4.AMI, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-2, UC-3, UC-6
7	Efficient Algorithms	C	6,00	6,00		GPC-3.AMI, PC-6, PC-8, UC-6
8	Optimization Methods	C	6,00	6,00		GPC-1.AMI, GPC-2.AMI, GPC-3.AMI, PC-10, PC-3, PC-5, PC-7, UC-1, UC-3
Major (3 out of 3)			18,00		18,00	
1	Deep Learning	C	6,00		6,00	GPC-1.AMI, GPC-2.AMI, PC-10, PC-3, PC-5, UC-1, UC-2
2	Functional Programming	C	6,00		6,00	GPC-1.AMI, GPC-2.AMI, PC-10, PC-3, PC-5, UC-1, UC-2
3	Computational Geometry	C	6,00		6,00	GPC-1.AMI, GPC-2.AMI, PC-10, PC-3, PC-5, UC-1, UC-2
Magolego			9,00	3,00	6,00	
1	All-university Pool MAGOLEGO Courses	E	9,00	3,00	6,00	GPC-1.AMI, PC-1, UC-1, UC-3, UC-6
Final State Certification (FSC)			3,00		3,00	
1	Final Qualification Paper	C	3,00		3,00	GPC-1.AMI, GPC-2.AMI, GPC-3.AMI, GPC-4.AMI, PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-7, PC-8, PC-9, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6

Curriculum agreed:

Academic Supervisor	YAKOVLEV P.A.	14.04.2023
Dean		14.04.2023
Deputy Director	KUZMIN P.V.	14.04.2023
Head of Centre for Educational Model Design	LEPESHKIN I.A.	05.05.2023

* Subject type:

Compulsory course	C
Elective course	E