



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 01.03.04 Applied Mathematics  
Educational Programme "Applied Mathematics"

Implementing unit: Tikhonov Moscow Institute of Electronics and Mathematics, HSE - Moscow

Years of Study: 2023/2024 - 2026/2027

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED  
29.05.2023  
Vice Rector  
ROSHCHIN S.Y.  
Signed with EDS

Block Code	Course	Subject type	Credits	Credits by Years				Planned Educational Programme Development Results
				1	2	3	4	
	Degree Programme		240,00	60,00	60,00	60,00	60,00	
	Major		168,00	48,00	46,00	37,00	37,00	
	Core Professional Block (Major)		109,00	39,00	37,00	25,00	8,00	
1	Physics	C	9,00	5,00	4,00			GPC-1, PC-6, PC-9, UC-1, UC-2, UC-7
2	Algebra	C	4,00	4,00				GPC-1, PC-9, UC-1, UC-2, UC-6
3	Discrete Mathematics	C	4,00	4,00				GPC-2, PC-9, UC-1, UC-2, UC-8
4	Linear Algebra and Analytical Geometry	C	9,00	9,00				GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
5	Algorithmization and Programming	C	13,00	6,00	7,00			GPC-3, GPC-4, PC-9, UC-1, UC-2, UC-6
6	Calculus	C	15,00	11,00	4,00			GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
7	Equations of Mathematical Physics	C	4,00			4,00		GPC-1, GPC-2, PC-1, PC-9, UC-1, UC-2, UC-6
8	Optimization Methods	C	4,00			4,00		GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
9	Control Theory	C	5,00				5,00	GPC-1, GPC-2, GPC-3, PC-1, PC-2, PC-9, UC-1, UC-2, UC-6
10	Theory of Stochastic Processes	C	6,00			6,00		GPC-1, GPC-2, PC-1, PC-9, UC-1, UC-2, UC-6
11	Operating Systems	C	4,00			4,00		GPC-4, PC-3, PC-9, UC-1, UC-2, UC-6
12	Numerical Methods (offered in a foreign language)	C	7,00			4,00	3,00	GPC-3, GPC-4, PC-3, PC-9, UC-2, UC-6
13	Differential Equations	C	4,00		4,00			GPC-1, PC-9, UC-1, UC-2, UC-6
14	Probability Theory and Mathematical Statistics	C	6,00		6,00			GPC-1, GPC-2, PC-1, PC-7, PC-9, UC-1, UC-2, UC-6
15	Theory of Complex Functions	C	4,00		4,00			GPC-1, PC-9, UC-1, UC-2, UC-6
16	Functional Analysis	C	7,00		4,00	3,00		GPC-1, PC-1, PC-9, UC-1, UC-2, UC-6
17	Theoretical Mechanics	C	4,00		4,00			GPC-1, GPC-2, PC-1, PC-9, UC-1, UC-2, UC-6

	Elective Professional Block (Major)		59,00	9,00	9,00	12,00	29,00	
	Научно-исследовательский/Проектный семинар		12,00	6,00	6,00			
1	Career-oriented Seminar "Introduction to Profession"	C	3,00	3,00				GPC-2, PC-2, UC-1, UC-3, UC-4
2	Project Seminar	C	3,00	3,00				GPC-3, GPC-4, PC-9, UC-1, UC-2
3	Research Seminar "Modern Computer Calculation Tools" (offered in a foreign language)	C	3,00		3,00			GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-7, PC-9, UC-1, UC-2
4	Research seminar "Additional chapters of algebra"	C	3,00		3,00			GPC-1, GPC-2, PC-2, UC-1, UC-2
	Дисциплины по выбору студентов		23,00			3,00	20,00	
1	Elective Courses	E	3,00			3,00		GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, UC-1, UC-2
2	Elective Courses	E	10,00				10,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-2
3	Elective Courses	E	10,00				10,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-2
	Дисциплины по выбору ОП		24,00	3,00	3,00	9,00	9,00	
1	Computer Practicum 1	C	3,00	3,00				GPC-3, GPC-4, PC-5, PC-9, UC-1, UC-2
2	Data Bases	C	3,00			3,00		GPC-4, PC-3, PC-9, UC-1, UC-2, UC-6
3	Computer Practicum 3	C	3,00			3,00		GPC-3, GPC-4, PC-1, PC-9
4	Computer Practicum 2	C	3,00		3,00			GPC-4, PC-8, UC-1, UC-2
5	Applied Stochastic Models and Control	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-3, PC-6, UC-1, UC-2
6	Asymptotical Methods	C	6,00			3,00	3,00	GPC-1, GPC-2, PC-1, PC-2, PC-6, UC-1, UC-2
7	Deep Learning	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-3, PC-7, UC-1, UC-2
	Internship		30,00	2,00	3,00	9,00	16,00	
	Professional Internship		7,00			4,00	3,00	
1	Work Experience Internship	C	4,00			4,00		GPC-1, GPC-2, GPC-3, GPC-4, PC-1, 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-4, UC-5
2	Graduation Internship	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, 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
	Project Internship		10,00	2,00	3,00	5,00		
1	Research or Applied Project (3rd)	C	5,00			5,00		GPC-2, GPC-3, GPC-4, PC-2, PC-4, PC-5, UC-1, UC-2, UC-3
2	Project (1st)	C	2,00	2,00				GPC-2, GPC-3, PC-2, PC-5, PC-7, UC-3, UC-6
3	Project (2nd)	C	3,00		3,00			GPC-3, PC-6, UC-1, UC-2, UC-3, UC-4, UC-6, UC-8
	Research Internship		13,00				13,00	

		C	13,00				13,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9
1	Preparation of Graduation Thesis							
2	Calculus	C						GPC-1, UC-1, UC-2
	<b>General Courses</b>		14,00	10,00	1,00		3,00	
	<b>Core General Courses</b>		2,00	1,00	1,00			
1	Safe Living Basics	C	1,00	1,00				UC-8
2	Physical Training	C	1,00		1,00			UC-7
	<b>Optional General Courses</b>		12,00	9,00			3,00	
1	Russian History	C	4,00	4,00				GPC-1, GPC-2, PC-10, PC-7, PC-8, PC-9, UC-1, UC-2, UC-4, UC-5
2	Economics	C	3,00				3,00	UC-9
3	Foundations of Russian Statehood	C	2,00	2,00				UC-5
4	Legal Literacy	C	3,00	3,00				UC-10
	<b>Minor</b>		20,00		10,00	10,00		
1	Minor	E	20,00		10,00	10,00		GPC-1, GPC-2, PC-4, PC-7, PC-8, PC-9, UC-1, UC-2
	<b>English</b>		1,00				1,00	
	<b>Examinations</b>		1,00				1,00	
1	Independent English Exam (offered in a foreign language)	C						UC-4
2	Project Proposal (offered in a foreign language)	C	1,00				1,00	UC-4
3	English Language Integrative Exam (offered in a foreign language)	C						UC-4
	<b>Optional Courses</b>							
1	English (offered in a foreign language)	O	14,00	8,00	6,00			UC-4
2	Academic English Writing (offered in a foreign language)	O	2,00				2,00	UC-2, UC-4
	<b>Data Culture</b>		4,00				4,00	
1	Independent Digital Literacy Test	C						GPC-1, GPC-2, UC-1, UC-2
2	Data Science, AI and Generative Models Independent Test. Advanced Level	C	1,00				1,00	GPC-1, GPC-2, UC-1, UC-2
3	Data Analysis and Machine Learning	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-3, PC-7, PC-9, UC-1, UC-2
4	External Examinations on Digital Skills. Final Level	C						UC-1, UC-2
5	External Examinations on Digital Skills. Entry-level	C						GPC-1, GPC-2, UC-1, UC-2
6	External Examinations on Digital Skills. Intermediate Level	C						GPC-1, GPC-2, UC-1, UC-2
7	Independent Programming Test. Advanced Level	C						GPC-1, GPC-2, UC-1, UC-2
	<b>Final State Certification (FSC)</b>		3,00				3,00	
	<b>Thesis Work</b>		3,00				3,00	

