



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 01.04.01 Mathematics  
Educational Programme "Mathematics"

Trajectories: "Algebra, Logic and Number Theory", "Analysis, Dynamical Systems and Probability Theory", "Mathematical Physics", "Topology, Combinatorics and Representation Theory"

Implementing unit: Faculty of Mathematics, HSE - Moscow

Years of Study: 2023/2024 - 2024/2025

Length of Programme: 2 years

Mode of Study: Full Time

Degree: Master's degree / MBA

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	
	Degree Programme		120,00	57,00	63,00	
	Mathematical Physics (Research track)		120,00	57,00	63,00	
	Key Seminars		18,00	9,00	9,00	
	Модуль "Ключевые семинары"		6,00	3,00	3,00	
1	Academic Mentor's Seminar "Mathematical Physics" (offered in a foreign language)	C	6,00	3,00	3,00	GPC-2.MAT, PC-4, UC-1, UC-3, UC-4
	-		12,00	6,00	6,00	
1	-	E	6,00	6,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-5, UC-1, UC-4, UC-5
2	Research Seminar "Mathematical Physics 1"	E	3,00	3,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-5, UC-1, UC-3, UC-4
3	Research Seminar "Mathematical Physics 2"	E	3,00	3,00		GPC-1.MAT, GPC-3.MAT, PC-1, PC-3, UC-1, UC-2, UC-3, UC-4
4	-	E	6,00		6,00	GPC-2.MAT, PC-3, PC-4, UC-1
5	Research Seminar "Mathematical Physics 1"	E	3,00		3,00	GPC-2.MAT, PC-2
6	Research Seminar "Mathematical Physics 2"	E	3,00		3,00	GPC-2.MAT, PC-2, UC-2
	Internship		30,00	6,00	24,00	
	Project Internship		1,00		1,00	
	Project activity		1,00		1,00	
1	Modern Typing of Mathematics	E	1,00		1,00	GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, UC-2, UC-3, UC-6

2	Practices of Research Presentations and Scientific Communicatons (offered in a foreign language)	E	1,00		1,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, UC-2, UC-3, UC-6
	Professional Internship		5,00		5,00	
1	Teaching Internship	C	5,00		5,00	GPC-2.MAT, PC-4, UC-1, UC-2
	Research Internship		24,00	6,00	18,00	
1	Term Paper	C	6,00	6,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, UC-1, UC-4
2	Preparation of the Graduate Thesis	C	18,00		18,00	GPC-1.MAT, PC-1, PC-3, UC-2, UC-4
	Major		60,00	36,00	24,00	
	Дисциплины по выбору		54,00	30,00	24,00	
1	-	E	30,00	30,00		GPC-2.MAT, GPC-3.MAT, PC-2, UC-1, UC-4, UC-5
2	-	E	24,00		24,00	GPC-1.MAT, GPC-3.MAT, PC-1, PC-3, UC-1, UC-3, UC-6
3	Introduction to Enumerative Combinatorics (offered in a foreign language)	E	6,00		6,00	GPC-2.MAT, PC-2, PC-4, UC-2
	Major		6,00	6,00		
1	Applied Analysis	C	6,00	6,00		GPC-1.MAT, PC-1, PC-3, PC-5, UC-1, UC-2, UC-3, UC-6
	Magolego		9,00	6,00	3,00	
1	All-university Pool MAGOLEGO Courses	E	9,00	6,00	3,00	GPC-1.MAT, GPC-2.MAT, PC-3, PC-4, UC-3, UC-4
	Final State Certification (FSC)		3,00		3,00	
1	Final Qualification Paper	C	3,00		3,00	GPC-1.MAT, PC-2, PC-3, UC-2, UC-4
	Algebra, Logic and Number Theory (Research track)		120,00	57,00	63,00	
	Key Seminars		18,00	9,00	9,00	
	Модуль "Ключевые семинары"		6,00	3,00	3,00	
1	Academic Mentor's Seminar "Algebra, Logic and Number Theory" (offered in a foreign language)	C	6,00	3,00	3,00	GPC-1.MAT, GPC-2.MAT, PC-3, UC-1, UC-2
	-		12,00	6,00	6,00	
1	Research Seminar "Geometric Structures on Manifolds 1"	E	3,00	3,00		GPC-1.MAT, PC-3, PC-4, UC-1, UC-4
2	Research Seminar "Geometric Structures on Manifolds 2"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-5, UC-1, UC-6
3	Research Seminar "Modern Problems of Mathematical Logic 1"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-4, UC-1, UC-4
4	Research Seminar "Modern Problems of Mathematical Logic 2"	E	3,00	3,00		GPC-2.MAT, PC-2, PC-3, PC-4, UC-1, UC-4
5	-	E	6,00	6,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-5, UC-1, UC-2, UC-4
6	-	E	6,00		6,00	GPC-2.MAT, GPC-3.MAT, PC-1, PC-3, UC-1, UC-6

7	Research Seminar "Representation Theory 1"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-3, PC-4, UC-2, UC-3, UC-4
8	Research Seminar "Representation Theory 2"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-3, PC-4, PC-5, UC-2, UC-3, UC-4, UC-5
9	Research Seminar "Geometric Structures on Manifolds 1"	E	3,00		3,00	PC-2
10	Research Seminar "Geometric Structures on Manifolds 2"	E	3,00		3,00	GPC-1.MAT, PC-3, UC-1
11	Research Seminar "Modern Problems of Mathematical Logic 1"	E	3,00		3,00	GPC-1.MAT, PC-1, UC-1
12	Research Seminar "Modern Problems of Mathematical Logic 2"	E	3,00		3,00	GPC-2.MAT, PC-4, UC-5
13	Research Seminar "Representation Theory 1"	E	3,00		3,00	GPC-2.MAT, PC-1, UC-2, UC-3, UC-4
14	Research Seminar "Representation Theory 2"	E	3,00		3,00	GPC-2.MAT, PC-3, UC-1
	Internship		30,00	6,00	24,00	
	Project Internship		1,00		1,00	
	Project activity		1,00		1,00	
1	Modern Typing of Mathematics	E	1,00		1,00	GPC-1.MAT, GPC-2.MAT, PC-1, PC-2, PC-4, UC-2, UC-3, UC-6
2	Practices of Research Presentations and Scientific Communicatons (offered in a foreign language)	E	1,00		1,00	GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
	Professional Internship		5,00		5,00	
1	Teaching Internship	C	5,00		5,00	GPC-3.MAT, PC-1, PC-3, UC-1, UC-4
	Research Internship		24,00	6,00	18,00	
1	Term Paper	C	6,00	6,00		GPC-2.MAT, GPC-3.MAT, PC-1, PC-3, PC-4, UC-1, UC-5, UC-6
2	Preparation of the Graduate Thesis	C	18,00		18,00	GPC-1.MAT, GPC-2.MAT, PC-1, PC-3, UC-1, UC-3, UC-4, UC-6
	Major		60,00	36,00	24,00	
	Elective Courses		54,00	30,00	24,00	
1	-	E	30,00	30,00		GPC-1.MAT, GPC-2.MAT, PC-3, PC-4, UC-1, UC-4, UC-5
2	-	E	24,00		24,00	GPC-1.MAT, GPC-2.MAT, PC-1, PC-3, PC-4, UC-3, UC-4, UC-6
3	Introduction to Enumerative Combinatorics (offered in a foreign language)	E	6,00		6,00	GPC-1.MAT, PC-3, UC-3
	Major		6,00	6,00		
	-		6,00	6,00		
1	Introduction to Differential Geometry (offered in a foreign language)	E	6,00	6,00		GPC-1.MAT, PC-1, PC-3, UC-2, UC-3, UC-4
2	Applied Analysis	E	6,00	6,00		GPC-1.MAT, GPC-2.MAT, PC-3, PC-4, UC-1, UC-2, UC-3, UC-4

	Magolego		9,00	6,00	3,00	
1	All-university Pool MAGOLEGO Courses	E	9,00	6,00	3,00	GPC-2.MAT, GPC-3.MAT, PC-3, PC-4, UC-2, UC-3, UC-6
	Final State Certification (FSC)		3,00		3,00	
1	Final Qualification Paper	C	3,00		3,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, UC-1, UC-2, UC-5
	Topology, Combinatorics and Representation Theory (Research track)		120,00	57,00	63,00	
	Key Seminars		18,00	9,00	9,00	
	Модуль "Ключевые семинары"		6,00	3,00	3,00	
1	Academic Mentor's Seminar "Topology, Combinatorics and Representation Theory" (offered in a foreign language)	C	6,00	3,00	3,00	GPC-2.MAT, GPC-3.MAT, PC-3, UC-3, UC-4
	-		12,00	6,00	6,00	
1	Research Seminar "Combinatorics of Invariants 1" (offered in a foreign language)	E	3,00	3,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, UC-2, UC-3, UC-4
2	Research Seminar "Combinatorics of Invariants 2" (offered in a foreign language)	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-1, UC-4, UC-5
3	Research Seminar "Representation Theory 1"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-1, PC-3, UC-2, UC-3, UC-6
4	Research Seminar "Representation Theory 2"	E	3,00	3,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-5, UC-2, UC-3, UC-6
5	-	E	6,00	6,00		GPC-1.MAT, GPC-3.MAT, PC-1, PC-3, PC-4, UC-1, UC-2, UC-3, UC-4
6	-	E	6,00		6,00	GPC-2.MAT, GPC-3.MAT, PC-1, PC-3, PC-4, UC-2, UC-3, UC-6
7	Research Seminar "Combinatorics of Invariants 1" (offered in a foreign language)	E	3,00		3,00	GPC-2.MAT, PC-1, PC-2, UC-1
8	Research Seminar "Combinatorics of Invariants 2" (offered in a foreign language)	E	3,00		3,00	GPC-2.MAT, PC-2, UC-2
9	Research Seminar "Representation Theory 1"	E	3,00		3,00	GPC-1.MAT, PC-3, UC-1
10	Research Seminar "Representation Theory 2"	E	3,00		3,00	GPC-2.MAT, PC-2, UC-2
	Internship		30,00	6,00	24,00	
	Project Internship		1,00		1,00	
	Project activity		1,00		1,00	
1	Modern Typing of Mathematics	E	1,00		1,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
2	Practices of Research Presentations and Scientific Communicatons (offered in a foreign language)	E	1,00		1,00	GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
	Professional Internship		5,00		5,00	
1	Teaching Internship	C	5,00		5,00	GPC-1.MAT, GPC-2.MAT, PC-1, PC-3, UC-2, UC-3, UC-6

	Research Internship		24,00	6,00	18,00	
1	Term Paper	C	6,00	6,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
2	Preparation of the Graduate Thesis	C	18,00		18,00	GPC-1.MAT, GPC-2.MAT, PC-3, PC-4, UC-2, UC-3, UC-6
	Major		60,00	36,00	24,00	
	Elective Courses		54,00	30,00	24,00	
1	-	E	30,00	30,00		GPC-1.MAT, GPC-3.MAT, PC-1, PC-3, UC-1, UC-3, UC-4
2	-	E	24,00		24,00	GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
3	Introduction to Enumerative Combinatorics (offered in a foreign language)	E	6,00		6,00	GPC-2.MAT, PC-2, PC-4, UC-2, UC-4
	Major		6,00	6,00		
	-		6,00	6,00		
1	Applied Analysis	E	6,00	6,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, UC-1, UC-3, UC-4
2	Introduction to Differential Geometry (offered in a foreign language)	E	6,00	6,00		GPC-1.MAT, GPC-2.MAT, PC-1, PC-3, UC-1, UC-4, UC-6
	Magolego		9,00	6,00	3,00	
1	All-university Pool MAGOLEGO Courses	E	9,00	6,00	3,00	GPC-2.MAT, PC-3, PC-4, UC-1, UC-4, UC-5
	Final State Certification (FSC)		3,00		3,00	
1	Final Qualification Paper (offered in a foreign language)	C	3,00		3,00	GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
	Analysis, Dynamical Systems and Probability Theory (Research track)		120,00	57,00	63,00	
	Key Seminars		18,00	9,00	9,00	
	Модуль "Ключевые семинары"		6,00	3,00	3,00	
1	Academic Mentor's Seminar "Analysis, Dynamical Systems and Probability Theory" (offered in a foreign language)	C	6,00	3,00	3,00	GPC-2.MAT, GPC-3.MAT, PC-3, PC-4, UC-2, UC-3, UC-6
	-		12,00	6,00	6,00	
1	Research Seminar "Representations and Probability 1" (offered in a foreign language)	E	3,00	3,00		GPC-1.MAT, GPC-2.MAT, PC-3, PC-4, UC-1, UC-4, UC-5
2	Research Seminar "Representations and Probability 2" (offered in a foreign language)	E	3,00	3,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
3	Research Seminar "Stochastic Analysis and its Applications in Economics 2" (offered in a foreign language)	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
4	Research Seminar "Stochastic Analysis and its Applications in Economics 1" (offered in a foreign language)	E	3,00	3,00		GPC-1.MAT, GPC-2.MAT, PC-3, PC-4, UC-1, UC-2, UC-5, UC-6

5	Research Seminar "Functional Analysis and Noncommutative Geometry 1"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-1, PC-2, PC-3, UC-2, UC-3, UC-4, UC-5
6	Research Seminar "Functional Analysis and Noncommutative Geometry 2"	E	3,00	3,00		GPC-2.MAT, GPC-3.MAT, PC-2, PC-3, PC-5, UC-3, UC-4, UC-6
7	Research Seminar "Dynamical Systems 1"	E	3,00	3,00		GPC-1.MAT, GPC-3.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-5, UC-6
8	Research Seminar "Dynamical Systems 2"	E	3,00	3,00		GPC-1.MAT, GPC-3.MAT, PC-1, PC-3, PC-5, UC-1, UC-4
9	-	E	6,00	6,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, UC-2, UC-3, UC-6
10	-	E	6,00		6,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, UC-2, UC-3, UC-6
11	Research Seminar "Dynamical Systems 1"	E	3,00		3,00	GPC-2.MAT, PC-2, UC-2
12	Research Seminar "Dynamical Systems 2"	E	3,00		3,00	GPC-1.MAT, PC-3, UC-1
13	Research Seminar "Representations and Probability 1" (offered in a foreign language)	E	3,00		3,00	GPC-1.MAT, GPC-2.MAT, PC-4, PC-5, UC-1, UC-2, UC-3, UC-4
14	Research Seminar "Representations and Probability 2" (offered in a foreign language)	E	3,00		3,00	GPC-2.MAT, PC-4, UC-4, UC-6
15	Research Seminar "Functional Analysis and Noncommutative Geometry 1"	E	3,00		3,00	GPC-2.MAT, PC-3, UC-2
16	Research Seminar "Functional Analysis and Noncommutative Geometry 2"	E	3,00		3,00	GPC-2.MAT, PC-2, PC-4, UC-2
	Internship		30,00	6,00	24,00	
	Project Internship		1,00		1,00	
	Project activity		1,00		1,00	
1	Modern Typing of Mathematics	E	1,00		1,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
2	Practices of Research Presentations and Scientific Communicatons (offered in a foreign language)	E	1,00		1,00	GPC-1.MAT, PC-2, UC-2, UC-3, UC-6
	Professional Internship		5,00		5,00	
1	Teaching Internship	C	5,00		5,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-1, UC-3, UC-6
	Research Internship		24,00	6,00	18,00	
1	Term Paper	C	6,00	6,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-1, UC-2, UC-4, UC-5, UC-6
2	Preparation of the Graduate Thesis	C	18,00		18,00	GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6
	Major		60,00	36,00	24,00	
	Elective Courses		54,00	30,00	24,00	
1	-	E	30,00	30,00		GPC-1.MAT, GPC-2.MAT, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6

