



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: 2020/2021 - 2023/2024

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED
08.04.2021
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		153,00	47,00	39,00	35,00	32,00	
	Core Professional Block (Major)		113,00	44,00	37,00	24,00	8,00	
	Subject Areas		113,00	44,00	37,00	24,00	8,00	
	Real, Complex and Functional Analysis		42,00	13,00	13,00	11,00	5,00	
1	Control Theory	C	5,00				5,00	GPC-1, GPC-2, GPC-3, PC-1, PC-3, PC-9, UC-1, UC-2, UC-6
2	Theory of Complex Functions	C	4,00		4,00			GPC-1, PC-9, UC-1, UC-2, UC-6
3	Functional Analysis	C	7,00		4,00	3,00		GPC-1, PC-1, PC-9, UC-1, UC-2, UC-6
4	Calculus	C	18,00	13,00	5,00			GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
5	Курсовая работа по дисциплины "Математический анализ"	C						GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
6	Optimization Methods	C	4,00			4,00		GPC-1, GPC-2, PC-1, 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
	Differential Equations		4,00		4,00			
1	Differential Equations	C	4,00		4,00			GPC-1, PC-1, PC-9, UC-1, UC-2, UC-6
	Linear Algebra and Analytical Geometry		10,00	10,00				
1	Linear Algebra and Analytical Geometry	C	10,00	10,00				GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
	Algebra and Discrete Mathematics		8,00	8,00				
1	Algebra	C	4,00	4,00				GPC-1, PC-9, UC-1, UC-2, UC-6
2	Discrete Mathematics	C	4,00	4,00				GPC-1, GPC-2, PC-9, UC-1, UC-2, UC-6
	Probability Theory and Mathematical Statistics		11,00		6,00	5,00		

1	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
2	Theory of Stochastic Processes	C	5,00			5,00		GPC-1, GPC-2, PC-1, PC-3, PC-9, UC-1, UC-2, UC-6
	Natural Sciences and Engineering		15,00	7,00	8,00			
1	Theoretical Mechanics	C	4,00		4,00			GPC-1, GPC-2, PC-1, PC-9, UC-1, UC-2, UC-6
2	Physics	C	11,00	7,00	4,00			GPC-1, PC-6, PC-7, PC-9, UC-1, UC-2, UC-6
	Algorithmisation		11,00			8,00	3,00	
1	Operating Systems	C	4,00			4,00		GPC-4, PC-3, PC-9, UC-1, UC-2, UC-6
2	Numerical Methods (offered in a foreign language)	C	7,00			4,00	3,00	GPC-1, GPC-3, GPC-4, PC-3, PC-9, UC-1, UC-2, UC-6
	Programming		12,00	6,00	6,00			
1	Algorithmization and Programming	C	12,00	6,00	6,00			GPC-3, GPC-4, PC-9, UC-1, UC-2, UC-6
	Elective Professional Block (Major)		40,00	3,00	2,00	11,00	24,00	
	Научно-исследовательский\Проектный семинар		8,00	3,00	2,00	3,00		
1	International Research and Development Projects (offered in a foreign language)	C	5,00		2,00	3,00		GPC-2, PC-10, PC-5, PC-8, UC-1, UC-3, UC-4
2	Career-oriented Seminar "Introduction to Profession"	C	3,00	3,00				GPC-2, PC-2, UC-1, UC-3, UC-4
	Дисциплина по выбору (1 из 6)		4,00			4,00		
1	Elective Courses	E	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
	Блоки дисциплин по выбору		28,00			4,00	24,00	
	"Математические и компьютерные методы для современных технологий"		28,00			4,00	24,00	
1	Research Seminar	E	4,00				4,00	GPC-2, PC-2, PC-4, PC-5, PC-7, PC-9, UC-1, UC-3, UC-4
2	Elective Courses	E	24,00			4,00	20,00	PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
	"Математическое моделирование, управление и обработка информации"		28,00			4,00	24,00	
1	Research Seminar	E	4,00				4,00	GPC-2, PC-2, PC-4, PC-5, PC-7, PC-9, UC-1, UC-3, UC-4
2	Elective Courses	E	24,00			4,00	20,00	PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
	"Прикладные методы стохастического анализа"		28,00			4,00	24,00	
1	Research Seminar	E	4,00				4,00	GPC-2, PC-2, PC-4, PC-5, PC-7, PC-9, UC-1, UC-3, UC-4
2	Elective Courses	E	24,00			4,00	20,00	PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
	Internship		46,00	8,00	10,00	12,00	16,00	
	Professional Internship		6,00			3,00	3,00	

1	Work Experience 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-3, UC-4, UC-5
2	Graduation Internship	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-3, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-3, UC-4, UC-5
	Project Internship		30,00	8,00	10,00	9,00	3,00	
1	Workshop "Information Systems"	C	3,00				3,00	GPC-4, PC-3, PC-9, UC-1, UC-2
2	Исследовательский или прикладной проект	E	8,00		3,00	5,00		GPC-1, GPC-2, GPC-3, GPC-4, PC-2, PC-4, PC-5, PC-9, UC-1, UC-3, UC-4
3	Computer Practicum in Mathematics-I	C	4,00		4,00			GPC-4, PC-1, PC-8, UC-1, UC-2
4	Проект 1 курс	E	2,00	2,00				GPC-3, PC-2, PC-5, PC-7
5	"Python in science and engineering" Computer practice	C	3,00	3,00				GPC-3, GPC-4, PC-9
6	Computer Practicum 1	C	3,00	3,00				GPC-3, GPC-4, PC-5, PC-9, UC-1, UC-2
7	Computer Practicum 2	C	3,00		3,00			GPC-4, PC-1, PC-8, UC-1, UC-2
8	Computer Practicum 3	C	4,00			4,00		GPC-3, GPC-4, PC-9
	Research Internship		10,00				10,00	
1	Preparation of Graduation Thesis	C	10,00				10,00	GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-3, PC-4, PC-5, PC-7, PC-9, UC-1, UC-3, UC-4, UC-6
	General Courses		14,00	5,00	1,00		8,00	
	Core General Courses		2,00	1,00	1,00			
1	Safe Living Basics	C	1,00	1,00				PC-8, UC-8
2	Physical Training	C	1,00		1,00			UC-7
	Optional General Courses		12,00	4,00			8,00	
1	Economics	C	4,00				4,00	PC-3, PC-9, UC-5, UC-9
2	Legal Literacy	C	4,00				4,00	PC-9, UC-1, UC-10, UC-11, UC-5
3	History	C	4,00	4,00				PC-9, UC-1, UC-5
	Minor		20,00		10,00	10,00		
1	Minor	C	20,00		10,00	10,00		PC-4, PC-7
	English		1,00				1,00	
	Examinations		1,00				1,00	
1	Project Proposal (offered in a foreign language)	C	1,00				1,00	PC-9, UC-4, UC-6
2	English Language Integrative Exam	C						UC-2, UC-4
3	Independent English Exam (offered in a foreign language)	C						PC-10, UC-4
	Optional Courses							
1	Academic Writing (offered in a foreign language)	O	2,00				2,00	UC-2, UC-4
2	English (offered in a foreign language)	O	8,00	8,00				UC-2, UC-4
3	English (offered in a foreign language)	O	6,00		6,00			UC-2, UC-4
	Data Culture		3,00			3,00		
1	Databases	C	3,00			3,00		GPC-4, PC-3, PC-9, UC-1, UC-2, UC-6
	Final State Certification (FSC)		3,00				3,00	

	Thesis Work		3,00				3,00	
1	Presenting of Graduation Thesis	C	3,00				3,00	PC-1, PC-10, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9

Curriculum agreed:

Academic Supervisor Presnova A.P. 26.03.2021

Dean KROUK E.A. 31.03.2021

Head of Centre for Educational Model Design LEPESHKIN I.A. 07.04.2021

* Subject type:

Compulsory course C

Elective course E

Optional course O