



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 01.03.02 Applied Mathematics and Information Science
Educational Programme "Applied Mathematics and Information Science"

Implementing unit: Faculty of Informatics, Mathematics and Computer Sciences, HSE - Nizhny Novgorod

Years of Study: 2020/2021 - 2023/2024

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED
28.05.2021
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		158,00	48,00	43,00	39,00	28,00	
	Core Professional Block (Major)		102,00	39,00	34,00	19,00	10,00	
	Subject Areas		102,00	39,00	34,00	19,00	10,00	
	Discrete Mathematics		8,00	8,00				
1	Discrete Mathematics	C	8,00	8,00				GPC-3, GPC-4, PC-3, UC-1
	Linear Algebra and Geometry		15,00	10,00	5,00			
1	Differential equations (offered in a foreign language)	C	5,00		5,00			GPC-3, GPC-4, PC-3, UC-1
2	Algebra	C	4,00	4,00				GPC-3, GPC-4, PC-3
3	Linear Algebra and Geometry	C	6,00	6,00				GPC-3, GPC-4, PC-3, UC-1
	Mathematical Analysis		12,00	8,00	4,00			
1	Calculus 1	C	8,00	8,00				GPC-3, GPC-4, PC-3, UC-1
2	Calculus 2	C	4,00		4,00			GPC-3, GPC-4, PC-3
	Probability Theory and Mathematical Statistics		12,00		8,00		4,00	
1	Introduction to multiple hypothesis testing procedures	C	4,00				4,00	GPC-3, GPC-4, GPC-5, PC-3, UC-1
2	Probability Theory and Mathematical Statistics	C	8,00		8,00			GPC-3, GPC-4, PC-3
	Programming		14,00	8,00	6,00			
1	Introduction to Programming	C	8,00	8,00				GPC-3, GPC-4, PC-2, PC-6, UC-1, UC-5, UC-8
2	Web Technologies and Databases	C	6,00		6,00			GPC-3, GPC-4, PC-2, PC-6, UC-5
	Algorithms and Data Structures		5,00		5,00			
1	Algorithms and Data Structures	C	5,00		5,00			GPC-3, GPC-4, PC-3
	Optimization Methods		25,00			19,00	6,00	

1	Stochastic Methods of Decision Making	C	4,00			4,00		GPC-3, GPC-4, PC-3
2	Risks and random processes	C	6,00				6,00	GPC-3, GPC-4, PC-3
3	Data Analysis and Data Mining	C	5,00			5,00		GPC-3, GPC-4, GPC-5, PC-3
4	Data Bases	C	4,00			4,00		GPC-3, GPC-4, GPC-5, PC-2, UC-5
5	Operations Research	C	6,00			6,00		GPC-3, GPC-4, PC-3
	Computer Architecture and Operating Systems		11,00	5,00	6,00			
1	Computer Architecture and Operating Systems	C	11,00	5,00	6,00			GPC-3, GPC-4, PC-3, UC-1
	Elective Professional Block (Major)		56,00	9,00	9,00	20,00	18,00	
1	Development of Applied Software	E	3,00			3,00		GPC-3, GPC-4, PC-3
2	Research Seminar"Web-Programming"	C	5,00	5,00				GPC-3, GPC-4, PC-3
3	Multithreaded programming (offered in a foreign language)	E	3,00			3,00		GPC-3, GPC-4, PC-3
4	Computational Linguistics (offered in a foreign language)	C	4,00				4,00	GPC-3, GPC-4, PC-3
5	The Internet of Things in Practice	C	4,00				4,00	GPC-3, GPC-4, PC-3
6	Network and Web Technologies	C	4,00			4,00		GPC-3, GPC-4, PC-3
7	Theory and Methods of Translation and Compilation	C	4,00			4,00		GPC-3, GPC-4, PC-3
8	Research seminar	C	15,00	4,00	5,00	2,00	4,00	GPC-2, GPC-3, GPC-4, UC-1, UC-2, UC-5, UC-8
9	Python Programming Language	C	4,00		4,00			GPC-3, GPC-4, PC-3, UC-1
10	Algorithms of Operations Research	E	4,00			4,00		GPC-3, GPC-4, PC-3
11	Distributed Computing	C	6,00				6,00	GPC-3, GPC-4, PC-3
	Internship		37,00	7,00	6,00	11,00	13,00	
	Professional Internship		17,00	7,00	1,00	4,00	5,00	
1	Work Experience Internship	C	4,00			4,00		GPC-4, PC-2, PC-3, PC-7, UC-4, UC-7, UC-8
2	Educational Internship	C	1,00		1,00			GPC-4, PC-2, PC-3, UC-1, UC-4, UC-7
3	Graduation Internship	C	5,00				5,00	GPC-3, GPC-4, PC-3, PC-7, UC-7, UC-8
4	Computer Workshop on Numerical Methods	C	7,00	7,00				GPC-2, GPC-3
	Project Internship		12,00		5,00	7,00		
1	Term Paper	C	10,00		5,00	5,00		GPC-2, GPC-3, UC-2, UC-3, UC-5, UC-6
2	Проект ПМИ	C	2,00			2,00		GPC-2, GPC-3, GPC-5, PC-2, UC-1, UC-4, UC-5, UC-6
	Research Internship		8,00				8,00	
1	Preparation of Graduation Thesis	C	8,00				8,00	GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-3, PC-6, PC-7, UC-2, UC-5, 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-1, UC-1, UC-3, UC-5
2	Physical Training	C	1,00		1,00			UC-1
	Optional General Courses		12,00	4,00			8,00	
1	Legal Literacy	C	4,00				4,00	GPC-4, PC-6, PC-7, UC-1, UC-10, UC-11, UC-5, UC-7, UC-8

2	Philosophy	C	4,00				4,00	GPC-2, GPC-3, GPC-4, PC-1, PC-2, UC-3, UC-4, UC-5, UC-6
3	Economics	C	4,00	4,00				GPC-2, GPC-3, GPC-4, PC-2, PC-3, UC-1, UC-11, UC-5, UC-9
	Minor		20,00		10,00	10,00		
1	Minor	C	20,00		10,00	10,00		GPC-3, GPC-4, UC-1, UC-5, UC-8
	English		1,00				1,00	
	Examinations		1,00				1,00	
1	Project Proposal (offered in a foreign language)	C	1,00				1,00	GPC-3, GPC-4, UC-1
2	English Language Integrative Exam	C						GPC-1, GPC-3, GPC-4, UC-1, UC-8
3	Independent English Exam (offered in a foreign language)	C						GPC-1, GPC-3, GPC-4, UC-1
	Optional Courses							
1	Academic Writing in English (offered in a foreign language)	O	2,00				2,00	GPC-1, GPC-3, GPC-4, PC-7, UC-1
2	English (offered in a foreign language)	O	14,00	8,00	6,00			GPC-1, GPC-3, GPC-4, UC-1
	Data Culture		6,00				6,00	
1	Data Analysis and Data Mining	C	6,00				6,00	GPC-3, GPC-4, GPC-5, PC-3
	Final State Certification (FSC)		4,00				4,00	
	Thesis Work		4,00				4,00	
1	Presenting of Graduation Thesis	C	4,00				4,00	GPC-2, GPC-3, GPC-4, PC-7, UC-1, UC-2, UC-6, UC-8

Curriculum agreed:

Academic Supervisor	KOLDANOV P.A.	25.05.2021
Dean	ASEEVA N.V.	25.05.2021
Deputy Director	FOMENKOV D.A.	25.05.2021
Head of Centre for Educational Model Design	LEPESHKIN I.A.	28.05.2021

* Subject type:

Compulsory course	C
Elective course	E
Optional course	O