



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 09.03.01 Information Science and Computation Technology
Educational Programme "Computer Technologies, Systems and Networks"

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

Years of Study: 2024/2025 - 2027/2028

APPROVED
27.05.2024
Vice Rector
ROSHCHIN S.Y.
Signed with EDS

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

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		165,00	52,00	38,00	40,00	35,00	
	Core Professional Block (Major)		122,00	47,00	29,00	34,00	12,00	
1	Calculus	C	9,00	9,00				GPC-1, GPC-2, PC-1, UC-1
2	Algebra and Geometry	C	6,00	6,00				GPC-1, PC-1, UC-1
3	Discrete Mathematics	C	6,00	6,00				GPC-1, GPC-2, PC-1, UC-1
4	Theory of Probability and Mathematical Statistics	C	6,00		6,00			GPC-1, GPC-2, PC-1, UC-1
5	Electronics and Electric Engineering	C	5,00		5,00			GPC-1, GPC-2, PC-1, PC-3, PC-4, UC-1, UC-2
6	Metrology, Standardization and Certification	C	3,00				3,00	GPC-4, PC-3, UC-3
7	Automata Theory (offered in a foreign language)	C	4,00		4,00			GPC-1, GPC-2, PC-1, UC-1, UC-2
8	Circuit Engineering	C	3,00			3,00		GPC-1, GPC-2, PC-1, UC-1, UC-2
9	Information Theory (offered in a foreign language)	C	5,00			5,00		GPC-1, GPC-3, PC-3, UC-1
10	Operating Systems	C	5,00		5,00			GPC-2, GPC-5, GPC-7, PC-1, PC-2, UC-1, UC-2
11	Data Bases	C	3,00			3,00		GPC-3, GPC-5, PC-2, UC-2
12	Digital Signal Processing	C	4,00			4,00		GPC-1, GPC-2, PC-1, PC-3, UC-1, UC-2
13	Communication Networks and Systems	C	7,00			3,00	4,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, PC-1, PC-3, PC-4, UC-1, UC-2
14	The General Theory of Communication	C	4,00			4,00		GPC-1, GPC-2, PC-1, PC-4, UC-1, UC-2
15	Methods and Means of Information Protection	C	5,00			5,00		GPC-1, GPC-2, PC-3, PC-5, UC-1, UC-2
16	Queuing Theory	C	3,00			3,00		GPC-1, GPC-2, PC-1, PC-3, UC-1, UC-2
17	Algorithms and Data Structures	C	6,00	6,00				GPC-1, GPC-2, GPC-3, GPC-4, GPC-8, PC-1, PC-2, PC-3, UC-1, UC-2
18	Computer Science	C	4,00	4,00				GPC-1, GPC-2, PC-1, UC-1, UC-2

19	Physics	C	7,00	7,00				GPC-1, PC-1, PC-3, PC-4, UC-1, UC-2
20	Modeling and Optimization Methods	C	4,00			4,00		GPC-1, GPC-2, PC-3, UC-1, UC-2
21	The Theory of Noise-tolerant Coding	C	5,00				5,00	GPC-1, GPC-2, PC-1, PC-3, PC-4, UC-1, UC-2
22	Object-Oriented Programming	C	9,00	4,00	5,00			GPC-3, GPC-4, GPC-5, GPC-8, GPC-9, PC-1, PC-2, PC-3, UC-1, UC-2
23	Programming Languages	C	9,00	5,00	4,00			GPC-2, GPC-3, GPC-4, GPC-5, GPC-8, GPC-9, PC-1, PC-2, PC-3, UC-1, UC-2
	Elective Professional Block (Major)		43,00	5,00	9,00	6,00	23,00	
	Elective Courses		6,00		6,00			
1	Programming in Python	E	3,00		3,00			GPC-2, GPC-3, GPC-4, GPC-5, GPC-8, PC-1, PC-2, PC-3
2	System Programming	E	3,00		3,00			GPC-2, GPC-5, GPC-8, PC-1, PC-2
3	Reliability of Infocommunication Systems	E	3,00		3,00			GPC-1, PC-1
4	Algorithmic Problems of Cryptography	E	3,00		3,00			GPC-1, PC-5
	Elective Courses		3,00			3,00		
1	Web-Programming	E	3,00			3,00		GPC-2, GPC-3, GPC-8, PC-1, PC-2, PC-3
2	Mobile Applications Development	E	3,00			3,00		GPC-2, GPC-3, GPC-8, PC-1, PC-2, PC-3
3	Multimedia Technologies in Infocommunications	E	3,00			3,00		GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-2, PC-3
	Elective Courses		15,00				15,00	
1	Mobile Communication Networks and Systems	E	5,00				5,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, PC-1, PC-3, PC-4
2	Network Security	E	5,00				5,00	GPC-1, GPC-2, GPC-3, PC-1, PC-4, PC-5
3	Cryptographic Protocols	E	5,00				5,00	GPC-1, GPC-2, GPC-3, PC-1, PC-4, PC-5
4	Database Security	E	5,00				5,00	GPC-3, PC-1, PC-5
5	Protection of Information Processes in Computer Systems	E	5,00				5,00	GPC-3, PC-1, PC-2, PC-5
6	Steganography Technologies in Infocommunication Systems	E	5,00				5,00	GPC-3, PC-1, PC-2, PC-5
	Вариативный профессиональный (Major)		14,00		3,00	3,00	8,00	
1	Special Sections of Coding Theory (offered in a foreign language)	C	4,00				4,00	GPC-1, GPC-2, PC-1, PC-3, PC-4
2	Antennas and Radio Wave Propagation	C	3,00		3,00			GPC-1, PC-1, PC-3, PC-4
3	Software-defined Radio	C	4,00				4,00	GPC-1, GPC-2, GPC-3, PC-1, PC-2, PC-3, PC-4
4	Programming in the Verilog Language	C	3,00			3,00		GPC-2, GPC-5, GPC-8, PC-1, PC-2
	Project Seminar		5,00	5,00				
1	Project Seminar "Python in Data Science"	C	5,00	5,00				GPC-1, PC-3, UC-1
	Internship		33,00	1,00	11,00	6,00	15,00	
	Professional Internship		4,00		2,00	2,00		

1	Work Experience Internship	C	4,00		2,00	2,00		GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, PC-5, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9
	Project Internship		12,00	1,00	4,00	4,00	3,00	
1	Research or Applied Project	C	12,00	1,00	4,00	4,00	3,00	GPC-1, GPC-3, GPC-4, GPC-8, GPC-9, PC-3, PC-4, UC-1, UC-2, UC-3, UC-4, UC-6, UC-9
	Research Internship		17,00		5,00		12,00	
1	Graduation Internship	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, PC-5, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-8, UC-9
2	Preparation of Graduation Thesis	C	9,00				9,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, PC-5, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-8, UC-9
3	Educational Science Research Internship	C	5,00		5,00			GPC-1, GPC-2, GPC-3, GPC-4, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, UC-1, UC-2, UC-4, UC-6
	General Courses		14,00	7,00	1,00		6,00	
	Core General Courses		2,00	1,00	1,00			
1	Physical Training	C	1,00		1,00			UC-7
2	Safe Living Basics	C	1,00	1,00				UC-11, UC-8
	Optional General Courses		12,00	6,00			6,00	
1	Russian History	C	4,00	4,00				UC-5
2	Foundations of Russian Statehood	C	2,00	2,00				UC-10, UC-5
3	Legal Literacy	C	3,00				3,00	UC-10
4	Economics	C	3,00				3,00	UC-9
	Minor		20,00		10,00	10,00		
1	Minor	E	20,00		10,00	10,00		GPC-1, GPC-2, GPC-3, GPC-5
	English		1,00				1,00	
	Examinations		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-1, UC-2, UC-4
3	English Language Integrative Exam	C						UC-4
	Optional Courses							
1	Academic Writing in English (offered in a foreign language)	O	2,00				2,00	UC-4
2	English (offered in a foreign language)	O	14,00	8,00	6,00			UC-4
	Data Culture		4,00				4,00	
1	Independent Digital Literacy Test	C						GPC-2, GPC-3
2	Independent Programming Test. Intermediate	C						GPC-2, GPC-8, GPC-9, PC-2, UC-1

3	Data Science, AI and Generative Models Independent Test. Intermediate	C	1,00			1,00		GPC-1, PC-3, UC-1
4	External Examinations on Digital Skills. Entry-level	C						GPC-1, PC-3, UC-1
5	External Examinations on Digital Skills. Intermediate Level	C						GPC-1, PC-3, UC-1
6	External Examinations on Digital Skills. Final Level	C						GPC-1, PC-3, UC-1
7	Data Analysis and AI Methods	C	3,00			3,00		GPC-1, PC-3, UC-1
	Final State Certification (FSC)		3,00				3,00	
	Thesis Work		3,00				3,00	
1	Presenting of Graduation Thesis	C	3,00				3,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, PC-5, UC-1, UC-10, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9

Curriculum agreed:

Academic Supervisor 14.05.2024

Dean 14.05.2024

Deputy Director KUZMIN P.V. 14.05.2024

Head of Centre for Educational Model Design LEPESHKIN I.A. 22.05.2024

* Subject type:

Compulsory course C

Elective course E

Optional course O