



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 09.03.01 Information Science and Computation Technology
Educational Programme "Information Science and Computation Technology"

Specializations: "Automated systems", "Computer Systems and Networks", "Elements and devices of embedded systems", "Information and analytical Systems"

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

Years of Study: 2024/2025 - 2027/2028

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED
19.04.2024
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		169,00	53,00	46,00	36,00	34,00	
	Core Professional Block (Major)		91,00	42,00	32,00	17,00		
1	Physics	C	16,00	12,00	4,00			GPC-1, PC-2, PC-3, UC-1
2	Calculus	C	16,00	12,00	4,00			GPC-1, GPC-2, UC-1
3	Algebra and Geometry	C	6,00	6,00				GPC-1, UC-1, UC-2
4	Computer Science	C	4,00	4,00				GPC-1, GPC-2, UC-1, UC-2
5	Algorithmization and Programming	C	8,00	8,00				GPC-1, GPC-2, UC-1, UC-2
6	Electrical Engineering	C	3,00		3,00			GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
7	Electronics	C	6,00		3,00	3,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
8	Object-Oriented Programming	C	4,00		4,00			GPC-1, GPC-2, UC-1, UC-2
9	Automata Theory and Control	C	3,00		3,00			GPC-1, GPC-2, UC-1, UC-2
10	Databases	C	4,00		4,00			GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
11	Discrete Mathematics	C	4,00		4,00			GPC-1, GPC-2, UC-1
12	Theory of Probability and Mathematical Statistics	C	3,00		3,00			GPC-1, GPC-2, UC-1, UC-2
13	Basics of metrology	C	3,00			3,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
14	Circuit Engineering	C	4,00			4,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
15	Computer Systems and Computer Networks	C	3,00			3,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
16	Operating Systems	C	4,00			4,00		GPC-1, GPC-2, UC-1, UC-2
	Elective Professional Block (Major)		78,00	11,00	14,00	19,00	34,00	
	Дисциплины по выбору ОП		19,00	4,00	3,00	4,00	8,00	
1	Computer Graphics	C	3,00		3,00			GPC-1, GPC-2, UC-1, UC-2
2	Automation of Design Works	C	4,00			4,00		GPC-1, GPC-3, GPC-6, PC-1, PC-2, PC-3, UC-1, UC-2

3	Computer-based Workshop on Engineering Graphics	C	4,00	4,00				
4	Information Protection	C	4,00				4,00	GPC-1, GPC-2, UC-1, UC-2
5	Mobile Applications Development (offered in a foreign language)	C	4,00				4,00	GPC-1, GPC-2, UC-1, UC-2
	-		27,00	7,00	11,00	6,00	3,00	
1	Project Seminar "Introduction to Project Activities"	C	2,00	2,00				GPC-1, GPC-2, PC-4, UC-2
2	Project Seminar "Python in Data Science"	C	5,00	5,00				GPC-1, GPC-2, PC-3, UC-1, UC-2
3	Project Seminar "Computer Practice in Mathematics"	C	3,00		3,00			GPC-2, GPC-3, PC-1, PC-5, UC-2
4	Project Seminar "Project Documentation"	C	2,00		2,00			GPC-2, GPC-3, PC-1, UC-2
5	Project seminar "Practical implementation of the modern technologies for creating information systems"	C	3,00		3,00			GPC-2, GPC-3, GPC-4, PC-3, PC-4, UC-1, UC-2
6	Scientific Research Seminar "Artificial Intelligence in Engineering Education"	C	3,00		3,00			GPC-1, GPC-2, GPC-3, GPC-4, PC-1, PC-3, PC-4, UC-1, UC-2
7	Project Seminar "Programming Tools and Technologies"	C	3,00			3,00		GPC-3, GPC-4, PC-3, PC-5, UC-6
8	Project Seminar "Fundamentals of Production Technology and Machine Learning"	C	3,00			3,00		GPC-3, PC-2, PC-7, UC-2
9	Project Seminar "Modeling of Application Software"	C	3,00				3,00	GPC-2, GPC-3, GPC-4, PC-3, PC-4, PC-5, UC-1, UC-2
	Специальные дисциплины блока направления		32,00				9,00	23,00
	Вычислительные системы и компьютерные сети		32,00				9,00	23,00
1	Network Video Technologies	C	4,00			4,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
2	Computer Network Design	C	5,00			5,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
3	Network Administration Practice	C	6,00				6,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
4	Artificial Intelligence in Multimedia	C	9,00				9,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
5	Web Application Design	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
	Элементы и устройства встраиваемых систем		32,00				9,00	23,00
1	Microcontroller Systems	C	5,00			5,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
2	Functional Units of Control Systems and Components	C	4,00				4,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
3	Standard and Custom Interfaces	C	6,00				6,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
4	Intelligent Embedded and Distributed Control Systems	C	9,00				9,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
5	Digital Signal Processing	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
	Автоматизированные системы		32,00				9,00	23,00
1	Intelligent Data Processing	C	5,00			5,00		GPC-1, GPC-2, PC-2, PC-6, UC-1, UC-2
2	Design of the Systems on a Chip	C	4,00				4,00	GPC-1, GPC-2, PC-1, PC-2, PC-6, PC-8, UC-1, UC-2
3	Artificial Intelligence Systems	C	6,00				6,00	GPC-1, GPC-2, PC-1, PC-2, PC-6, UC-1, UC-2
4	System Design of Digital Devices	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, PC-6, UC-1, UC-2

5	High-Level Modelling and Simulation of Digital Systems	C	9,00			9,00	GPC-1, GPC-2, PC-1, PC-2, PC-6, UC-1, UC-2
	Corporate information and analytical systems		32,00		9,00	23,00	
1	Corporate Information-Analytical Systems	C	4,00		4,00		GPC-1, GPC-2, PC-1, PC-2, PC-5, PC-6, UC-1, UC-2
2	Corporate Data Warehouses. Data Integration Methods	C	5,00		5,00		GPC-1, GPC-2, PC-1, PC-2, PC-5, PC-6, UC-1, UC-2
3	Methods and means of ensuring the life cycle of software for information and analytical systems	C	8,00			8,00	GPC-1, GPC-2, PC-1, PC-2, PC-5, PC-6, UC-1, UC-2
4	Data Analysis Applications in the Development of Analytical Information Systems	C	9,00			9,00	GPC-1, GPC-2, PC-1, PC-2, PC-5, PC-6, UC-1, UC-2
5	Word Processing Methods	C	6,00			6,00	GPC-1, GPC-2, PC-1, PC-2, PC-5, PC-6, UC-1, UC-2
	Internship		30,00	3,00	8,00	19,00	
	Professional Internship		3,00		3,00		
1	Work Experience Internship	C	3,00		3,00		GPC-5, GPC-7, GPC-8, PC-2, PC-3, PC-6, PC-8, UC-3, UC-4, UC-5
2	Algorithmization and Programming	C					GPC-1, GPC-2, UC-1, UC-2
	Project Internship		8,00	3,00	5,00		
1	Research or Applied Project	C	8,00	3,00	5,00		GPC-4, GPC-8, GPC-9, PC-6, PC-7, PC-8, UC-3, UC-6
	Research Internship		19,00			19,00	
1	Graduation Internship	C	4,00			4,00	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, PC-6, PC-7, PC-8, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9
2	Preparation of Graduation Thesis	C	11,00			11,00	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, PC-6, PC-7, PC-8, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9
3	Qualifying Internship	C	4,00			4,00	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, PC-6, PC-7, PC-8, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9
	General Courses		14,00	7,00	1,00	3,00	3,00
	Core General Courses		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
	Optional General Courses		12,00	6,00		3,00	3,00
1	Foundations of Russian Statehood	C	2,00	2,00			UC-3, UC-4, UC-5, UC-6, UC-7
2	Russian History	C	4,00	4,00			UC-3, UC-4, UC-5, UC-6, UC-7
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	C	20,00		10,00	10,00		GPC-1, GPC-2, GPC-3, GPC-4, GPC-5
	English		1,00				1,00	
	Examinations		1,00				1,00	
1	Independent English Exam (offered in a foreign language)	C						UC-2, UC-4
2	Project Proposal (offered in a foreign language)	C	1,00				1,00	UC-2, UC-4
3	English Language Integrative Exam (offered in a foreign language)	C						UC-2, UC-4
	Optional Courses							
1	English (offered in a foreign language)	O	14,00	8,00	6,00			UC-3, UC-4, UC-5, UC-6
2	Academic Writing (offered in a foreign language)	O	2,00				2,00	UC-2, UC-4
	Data Culture		3,00				3,00	
1	Independent Digital Literacy Test	C						GPC-1, GPC-2, UC-1, UC-2
2	Independent Programming Test. Intermediate	C						GPC-1, GPC-2, UC-1, UC-2
3	Data Science, AI and Generative Models Independent Test. Intermediate	C						GPC-1, GPC-2, UC-1, UC-2
4	Programming of Web Services and Embedded Systems	C	3,00				3,00	GPC-6, PC-8
5	External Examinations on Digital Skills. Final Level	C						GPC-2
6	External Examinations on Digital Skills. Entry-level	C						GPC-2
7	External Examinations on Digital Skills. Intermediate Level	C						GPC-2
	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, PC-6, PC-7, PC-8, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9

Curriculum agreed:

Academic Supervisor	POLESSKIY S.N.	04.04.2024
Dean	KROUK E.A.	05.04.2024
Head of Centre for Educational Model Design	LEPESHKIN I.A.	18.04.2024

* Subject type:

Compulsory course C

Optional course

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