



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"

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

Years of Study: 2022/2023 - 2025/2026

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED

13.04.2022

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		168,00	55,00	46,00	35,00	32,00	
	Core Professional Block (Major)		96,00	45,00	35,00	16,00		
1	Electrical Engineering	C	3,00		3,00			GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
2	Electronics	C	6,00		3,00	3,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
3	Object-Oriented Programming	C	4,00		4,00			GPC-1, GPC-2, UC-1, UC-2
4	Automata Theory and Control	C	4,00		4,00			GPC-1, GPC-2, UC-1, UC-2
5	Databases	C	5,00		5,00			GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
6	Discrete Mathematics	C	4,00		4,00			GPC-1, GPC-2, UC-1
7	Probability Theory and Mathematical Statistics	C	4,00		4,00			GPC-1, UC-1, UC-2
8	Calculus	C	16,00	12,00	4,00			GPC-1, GPC-2, UC-1
9	Computer Science	C	4,00	4,00				GPC-1, GPC-2, UC-1, UC-2
10	Algorithmization and Programming	C						GPC-1, GPC-2, UC-1, UC-2
11	Metrology and Electric and Radio Measurements	C	3,00			3,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
12	Circuit Engineering	C	4,00			4,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
13	Operating Systems	C	3,00			3,00		GPC-1, GPC-2, UC-1, UC-2
14	Computer Systems and Computer Networks	C	3,00			3,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
15	Algebra and Geometry	C	5,00	5,00				GPC-1, UC-1, UC-2
16	Algorithmization and Programming	C	12,00	12,00				GPC-1, GPC-2, UC-1, UC-2
17	Physics	C	16,00	12,00	4,00			GPC-1, PC-2, PC-3, UC-1
	Elective Professional Block (Major)		72,00	10,00	11,00	19,00	32,00	
	Научно-исследовательский и проектный семинар		24,00	7,00	7,00	6,00	4,00	
1	Project Seminar "Computer Practice in Mathematics"	C	4,00		4,00			GPC-2, GPC-3, PC-1, PC-5, UC-2

2	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
3	Project Seminar 3	C	3,00			3,00		GPC-3, GPC-4, PC-3, PC-5, UC-6
4	Project seminar "Machine Learning"	C	3,00			3,00		GPC-3, PC-2, PC-7, UC-2
5	Project Seminar "Project Documentation"	C	4,00				4,00	GPC-2, GPC-3, PC-1, PC-5, UC-2
6	Project Seminar 1	C	2,00	2,00				GPC-1, GPC-2, PC-4, UC-2
7	Project Seminar "Python in Data Science"	C	5,00	5,00				GPC-1, GPC-2, PC-3, UC-1, UC-2
	Специальные дисциплины блока направления		32,00			10,00	22,00	
	Elective Courses 1		32,00			10,00	22,00	
1	Network Video Technologies	C	5,00			5,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
2	Design of Computer Systems and Networks	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	Multimedia Technologies	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
5	Web Application Development	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
	Elective Courses 2		32,00			10,00	22,00	
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	5,00			5,00		GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
3	Digital Signal Processing	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
4	Standard and Custom Interfaces	C	6,00				6,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
5	Embedded and Distributed Control Systems	C	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, UC-1, UC-2
	Elective Courses 3		32,00			10,00	22,00	
1	Design of the Systems on a Chip	C	5,00			5,00		GPC-1, GPC-2, PC-1, PC-2, PC-6, PC-8, UC-1, UC-2
2	Intelligent Data Processing	C	5,00			5,00		GPC-1, GPC-2, PC-1, PC-2, PC-6, 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	8,00				8,00	GPC-1, GPC-2, PC-1, PC-2, PC-6, UC-1, UC-2
	Дисциплины по выбору ОП		16,00	3,00	4,00	3,00	6,00	
1	Computer Graphics	C	4,00		4,00			GPC-1, GPC-2, UC-1, UC-2
2	Automation of Design Works	C	3,00			3,00		GPC-1, GPC-3, GPC-6, PC-1, PC-3, UC-1, UC-2
3	Mobile Applications Development	C	3,00				3,00	GPC-1, GPC-2, UC-1, UC-2
4	Information Protection	C	3,00				3,00	GPC-1, GPC-2, UC-1, UC-2
5	Computer-based Workshop on Engineering Graphics	C	3,00	3,00				GPC-3, GPC-4, PC-6, UC-1
	Internship		30,00		3,00	8,00	19,00	
	Professional Internship		7,00			3,00	4,00	
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	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
	Project Internship		8,00		3,00	5,00		
1	Research or Applied Project	E	5,00			5,00		GPC-4, GPC-8, GPC-9, PC-6, PC-7, PC-8, UC-3, UC-6
2	Research or Applied Project	C	3,00		3,00			GPC-4, GPC-8, GPC-9, PC-6, PC-7, PC-8, UC-3, UC-6
	Research Internship		15,00				15,00	
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
	General Courses		14,00	5,00	1,00	4,00	4,00	
	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	4,00		4,00	4,00	
1	Elective courses	E	4,00	4,00				UC-3, UC-4, UC-5, UC-6, UC-7
2	Economics	C	4,00			4,00		UC-9
3	Law	C	4,00				4,00	UC-10
	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	C						UC-2, UC-4
2	Project Proposal	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	Academic Writing (offered in a foreign language)	O	2,00				2,00	UC-2, UC-4
2	English (offered in a foreign language)	O	14,00	8,00	6,00			UC-3, UC-4, UC-5, UC-6
	Data Culture		4,00			3,00	1,00	
1	Independent Programming Test. Intermediate	C						GPC-1, GPC-2, UC-1, UC-2
2	External Examinations on Digital Skills. Entry-level	C						GPC-2
3	External Examinations on Digital Skills. Intermediate Level	C						GPC-2
4	External Examinations on Digital Skills. Final Level	C						GPC-2

5	Independent Digital Literacy Test	C					GPC-1, GPC-2, UC-1, UC-2
6	Programming of Web Services and Embedded Systems	C	3,00			3,00	GPC-6, PC-8
7	Independent Data Science Test. Intermediate	C	1,00			1,00	GPC-1, GPC-2, UC-1, UC-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.	07.04.2022
Dean	KROUK E.A.	08.04.2022
Head of Centre for Educational Model Design	LEPESHKIN I.A.	12.04.2022

* Subject type:

Compulsory course	C
Elective course	E
Optional course	O