



Basic Curriculum

Speciality 10.05.01 Cyber Security
Educational Programme "Cyber Security"

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

APPROVED
26.01.2023
Vice Rector
ROSHCHIN S.Y.
Signed with EDS

Years of Study: 2020/2021 - 2025/2026

Length of Programme: 5 years 6 months

Mode of Study: Full Time

Degree: Specialist's degree

Block Code	Course	Subject type	Credits	Credits by Years						Planned Educational Programme Development Results
				1	2	3	4	5	6	
	Вся образовательная программа		330,00	60,00	60,00	60,00	60,00	60,00	30,00	
	Block 1. Courses (Modules)		280,00	60,00	60,00	56,00	48,00	56,00		
	General Programme Part		29,00	15,00	5,00	3,00	6,00			
1	Safe Living Basics	C	1,00	1,00						GPC-7
2	Physical Training	C	1,00		1,00					, GPC-7
3	History of Fatherland	C	3,00	3,00						GPC-1
4	Foreign Language (English) (offered in a foreign language)	C	12,00	8,00	4,00					, GPC-6
5	Economics	C	3,00			3,00				GPC-1
6	Data-Culture	C	3,00	3,00						
7	Project Management	C	3,00				3,00			, GPC-4
8	Philosophy	C	3,00				3,00			, GPC-8
	Professional Programme Part (Major)		251,00	45,00	55,00	53,00	42,00	56,00		
	Basic Components		169,00	42,00	45,00	31,00	25,00	26,00		
1	Servers and Workstations Security	C	3,00					3,00		PC-10, PC-11, PC-3, PC-9
2	Operating Systems Security	C	3,00					3,00		PC-13, PC-9
3	Software and Data Security	C	4,00					4,00		, PC-10, PC-11, PC-18, PC-3, PC-4, PC-6, PC-9
4	Computer Networks	C	3,00					3,00		PC-5
5	Cryptographic Protocols	C	4,00					4,00		, PC-15, PC-16, PC-17, PC-18, PC-6, PC-8
6	Basics of Building Protected Computer Networks	C	3,00					3,00		, PC-11, PC-5, PC-7, PC-9
7	Technical Protection of Information	C	6,00					6,00		, PC-11, PC-16, PC-6, PC-8, PC-9
8	Information Theory	C	4,00			4,00				PC-16
9	Physics	C	9,00	5,00	4,00					, PC-6
10	Computer Science	C	4,00	4,00						, GPC-8, GPC-9, PC-14, PC-5
11	Programming Languages	C	18,00	11,00	7,00					GPC-11, GPC-9, PC-15, PC-18, PC-7
12	Hardware Computer Technology	C	7,00	3,00	4,00					GPC-9, PC-6
13	Programming Techniques (offered in a foreign language)	C	4,00			4,00				GPC-10, GPC-11, GPC-9, PC-12, PC-15, PC-18, PC-7

14	Operating Systems	C	11,00			6,00	5,00			GPC-9, PC-10, PC-3
15	Electronics and Circuit Engineering	C	7,00		4,00	3,00				PC-18
16	Basics of Information Security	C	3,00			3,00				PC-5, PC-9
17	Organizational and Legal Support for Information Security	C	3,00		3,00					, GPC-3, GPC-4, PC-12, PC-13, PC-2, PC-4, PC-8
18	Calculus	C	18,00	10,00	8,00					PC-17
19	Algebra	C	9,00	6,00	3,00					PC-17
20	Geometry	C	3,00	3,00						PC-17
21	Probability Theory and Mathematical Statistics	C	4,00		4,00					PC-17
22	Mathematical Logic and Theory of Algorithms	C	4,00		4,00					, PC-16
23	Discrete Mathematics	C	8,00		4,00	4,00				PC-17
24	English Language Integrative Exam (offered in a foreign language)	C								, GPC-6
25	English for Specific Purposes. IT and Cyber Security (offered in a foreign language)	C	3,00			3,00				, GPC-6, GPC-9
26	Organizational and Legal Support for Information Security	C								, GPC-3, GPC-4, PC-12, PC-13, PC-2, PC-4, PC-8
27	Independent English Exam (offered in a foreign language)	C								, GPC-6
28	Mathematical Statistics	C	4,00			4,00				PC-17
29	Cryptographic Methods of Information Security	C								, PC-15, PC-16, PC-17, PC-18, PC-6, PC-8
30	Database Management Systems (offered in a foreign language)	C	4,00				4,00			PC-4
31	Systems and Networks of Information Transfer	C	4,00				4,00			PC-6
32	Computer Security Models	C	5,00				5,00			PC-2
33	Cryptographic Methods of Information Security	C	7,00				7,00			PC-16, PC-6
	Вариативная профильная часть, включая дисциплины специализаций и дисциплины по выбору		53,00	3,00	10,00	22,00	3,00	15,00		
1	Parallel Computing	C	4,00					4,00		GPC-10, GPC-9, PC-15, PC-18
2	Programming of Information Security Algorithms	C	4,00					4,00		GPC-10, PC-16
3	Academic English Writing (offered in a foreign language)	C	3,00					3,00		, GPC-6
4	Intrusion Detection Systems	C	4,00					4,00		PC-11, PC-13
5	Introduction to Number Theory	C	3,00	3,00						PC-16, PC-17
6	Differential Equations	C	5,00			5,00				PC-17
7	Theory of Complex Functions	C	5,00			5,00				PC-17
8	Assembly Language	C	4,00			4,00				GPC-10
9	Methods of Data Analysis	C	4,00			4,00				, PC-17
10	Python Programming Language	C	4,00			4,00				GPC-11, GPC-9, PC-15, PC-18, PC-7
11	History of Cryptography	C	4,00		4,00					, GPC-5, GPC-9, PC-16, PC-18
12	Computer Mathematics: Supplementary Chapters (offered in a foreign language)	C	3,00		3,00					
13	Methods and Algorithms of Graph Theory	C	3,00		3,00					GPC-11, PC-16, PC-17
14	English for Research and Publication Purposes (offered in a foreign language)	C	3,00				3,00			, GPC-6
	Elective Courses		29,00				14,00	15,00		
	Elective Courses 1		29,00				14,00	15,00		

1	Standard and Custom Interfaces	E	6,00					6,00		GPC-9
2	Implementation Analysis of Information Security Algorithms	E	3,00					3,00		PC-16, PC-17, PC-18
3	Methods for Protecting and dePersonalizing Personal Data (offered in a foreign language)	E	3,00					3,00		PC-10, PC-18
4	Fundamentals of Computer incident investigation	E	3,00					3,00		PC-10
5	Information Security Management	E	3,00				3,00			GPC-8, PC-10
6	Methods for searching for vulnerabilities and penetration into information systems	E	4,00				4,00			GPC-10, GPC-8
7	How to Process and Store Big Data and Machine Learning	E	3,00				3,00			GPC-10, GPC-8
8	Microcontroller Systems	E	4,00				4,00			GPC-10, GPC-11
Elective Courses 2			29,00				14,00	15,00		
1	Public Key Infrastructure (offered in a foreign language)	E	3,00					3,00		PC-10, PC-16
2	Methods of Synthesis and Analysis of Modern Cryptographic Algorithms	E	4,00					4,00		PC-16, PC-17, PC-9
3	Quantum Computations	E	4,00					4,00		GPC-10, PC-16
4	Methods of Algebraic Geometry in Cryptography	E	4,00					4,00		PC-15, PC-18
5	Theory of Coding, Compression and Data Recovery	E	4,00				4,00			GPC-6, GPC-8
6	Methods of Information Security in Financial and Banking Activities	E	3,00				3,00			GPC-6, GPC-8
7	Number Theory Methods in Cryptography	E	4,00				4,00			GPC-6, GPC-8
8	Theory of Pseudo-random Generators	E	3,00				3,00			GPC-6, GPC-8
Optional Courses										
Block 2. Practice(s), Project and(or) Research work			44,00				4,00	12,00	4,00	24,00
Research Work			4,00						4,00	
1	Research Seminar	C	4,00						4,00	, PC-12
Project Activity			11,00				4,00	7,00		
Projects and Project Seminar			11,00				4,00	7,00		
1	Project	E	8,00				4,00	4,00		, GPC-1, GPC-10, GPC-11, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
2	Project Seminar	C	3,00					3,00		GPC-4, GPC-5
Internships			29,00					5,00		24,00
1	Work Experience Internship	C	5,00					5,00		, GPC-1, GPC-10, GPC-11, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
2	Preparation of Graduation Thesis	C	16,00						16,00	, GPC-1, GPC-10, GPC-11, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9

3	Graduation Internship	C	8,00					8,00	, GPC-1, GPC-10, GPC-11, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
Block 3. Final State Certification			6,00					6,00	
1	State Interdisciplinary Examination	C	3,00					3,00	, GPC-1, GPC-10, GPC-11, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9
2	Защита выпускной квалификационной работы	C	3,00					3,00	, GPC-1, GPC-10, GPC-11, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9

Curriculum agreed:

Academic Supervisor	LOS A.B.	23.01.2023
Dean	KROUK E.A.	23.01.2023
Head of Centre for Educational Model Design	LEPESHKIN I.A.	25.01.2023

* Subject type:

Compulsory course	C
Elective course	E