



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: 2019/2020 - 2024/2025

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		331,00	60,00	61,00	3,00	60,00	60,00	30,00	
	Block 1. Courses (Modules)		283,00	60,00	61,00	3,00	46,00	56,00		
	General Programme Part		30,00	15,00	6,00	3,00	6,00			
1	Physical Training	C	1,00		1,00					GPC-7
2	Philosophy	C	3,00				3,00			, GPC-2
3	History of Fatherland	C	3,00	3,00						GPC-1
4	Foreign Language (English)	C	13,00	8,00	5,00					, GPC-6
5	Project Management	C	3,00				3,00			, GPC-1, GPC-2, PC-12, PC-13, PC-7, PC-8
6	Data-Culture	C	3,00	3,00						
7	Safe Living Basics	C	1,00	1,00						GPC-7
8	Economics	C	3,00			3,00				GPC-1
	Professional Programme Part (Major)		253,00	45,00	55,00		40,00	56,00		
	Basic Components		175,00	41,00	45,00	33,00	28,00	28,00		
1	Calculus	C	18,00	10,00	8,00					PC-17
2	Algebra	C	11,00	8,00	3,00					PC-17
3	Geometry	C	3,00	3,00						PC-17
4	Probability Theory and Mathematical Statistics	C	9,00		5,00	4,00				PC-17
5	Mathematical Logic and Theory of Algorithms	C	4,00		4,00					, PC-16
6	Discrete Mathematics	C	10,00		5,00	5,00				PC-17
7	Information Theory	C	4,00			4,00				PC-16
8	Physics	C	9,00	5,00	4,00					, PC-6
9	Computer Science	C	4,00	4,00						, GPC-8, GPC-9, PC-14, PC-5
10	Programming Languages	C	12,00	8,00	4,00					GPC-11, GPC-9, PC-15, PC-18, PC-7
11	Hardware Computer Technology	C	7,00	3,00	4,00					GPC-9, PC-6
12	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
13	Database Management Systems (offered in a foreign language)	C	4,00				4,00			PC-4
14	Electronics and Circuit Engineering	C	8,00		4,00	4,00				PC-18

15	Systems and Networks of Information Transfer	C	4,00				4,00			PC-5, PC-9
16	Basics of Information Security	C	3,00			3,00				PC-5, PC-9
17	Computer Security Models	C	5,00				5,00			, PC-1, PC-13, PC-18, PC-2, PC-3, PC-7, PC-8
18	Organizational and Legal Support for Information Security	C	4,00		4,00					, GPC-3, GPC-4, PC-12, PC-13, PC-2, PC-4, PC-8
19	Technical Protection of Information	C	6,00					6,00		, PC-11, PC-18, PC-6, PC-8, PC-9
20	Cryptographic Methods of Information Security	C	7,00				7,00			, PC-15, PC-16, PC-17, PC-18, PC-6, PC-8
21	Basics of Building Protected Computer Networks	C	3,00					3,00		, PC-11, PC-5, PC-7, PC-9
22	Operating Systems Security	C	3,00					3,00		PC-10, PC-11, PC-3, PC-9
23	Cryptographic Protocols	C	5,00					5,00		, PC-15, PC-16, PC-17, PC-18, PC-6, PC-8
24	English Language Integrative Exam	C								, GPC-6
25	Independent English Exam	C								, GPC-6
26	Software and Data Security	C	5,00					5,00		, PC-10, PC-11, PC-18, PC-3, PC-4, PC-6, PC-9
27	Cryptographic Methods of Information Security	C								, PC-15, PC-16, PC-17, PC-18, PC-6, PC-8
28	Organizational and Legal Support for Information Security	C								, GPC-3, GPC-4, PC-12, PC-13, PC-2, PC-4, PC-8
29	Probability Theory and Mathematical Statistics	C								PC-17
30	Basics of Information Security	C								PC-5, PC-9
31	English for Specific Purposes. IT and Cyber Security (offered in a foreign language)	C	3,00			3,00				, GPC-6, GPC-9, PC-6
32	English for Research and Publication Purposes (offered in a foreign language)	C	3,00				3,00			, GPC-6, GPC-9
33	Operating Systems	C	11,00			6,00	5,00			GPC-4, GPC-8, PC-12
34	Computer Networks	C	6,00					6,00		GPC-10, PC-4
	Вариативная профильная часть, включая дисциплины специализаций и дисциплины по выбору		78,00	4,00	10,00	24,00	12,00	28,00		
1	Project Proposal (offered in a foreign language)	C								GPC-6
2	Introduction to Number Theory	C	4,00	4,00						PC-16, PC-17
3	Methods and Algorithms of Graph Theory	C	3,00		3,00					GPC-11, PC-16, PC-17
4	Computer Mathematics: Supplementary Chapters (offered in a foreign language)	C	3,00		3,00					
5	History of Cryptography	C	4,00		4,00					, GPC-5, GPC-9, PC-16, PC-18
6	Differential Equations	C	4,00			4,00				PC-17
7	Functional Analysis	C	5,00			5,00				PC-17
8	Python Programming Language	C	4,00			4,00				GPC-11, GPC-9, PC-15, PC-18, PC-7
9	Methods of Data Analysis	C	3,00			3,00				, PC-17
10	Theory of Complex Functions	C	4,00			4,00				PC-17
11	Assembly Language	C	4,00			4,00				GPC-10
	Блок дисциплин по выбору		27,00				12,00	15,00		
	Block 1		27,00				12,00	15,00		
1	Servers and Workstations Security	E	4,00					4,00		, PC-6
2	Intrusion Detection Systems	E	4,00					4,00		PC-11, PC-9
3	Implementation Analysis of Information Security Algorithms	E	4,00					4,00		, PC-16, PC-17, PC-9

4	Information Security Management	E	3,00				3,00			GPC-3, GPC-4, PC-8, PC-9
5	Methods for searching for vulnerabilities and penetration into information systems	E	3,00				3,00			PC-2, PC-3
6	Microcontroller Systems	E	3,00				3,00			PC-10, PC-11
7	How to Process and Store Big Data and Machine Learning	E	3,00				3,00			PC-15, PC-17
8	Methods for Protecting and dePersonalizing Personal Data (offered in a foreign language)	E	3,00					3,00		PC-12, PC-14
Block 2			27,00				12,00	15,00		
1	Number Theory Methods in Cryptography	E	3,00				3,00			, PC-15, PC-16, PC-17, PC-6
2	Theory of Coding, Compression and Data Recovery	E	3,00				3,00			PC-17, PC-18
3	Methods of Synthesis and Analysis of Modern Cryptographic Algorithms	E	4,00					4,00		PC-16, PC-17, PC-9
4	Quantum Computations	E	4,00					4,00		GPC-10, PC-16
5	Methods of Information Security in Financial and Banking Activities	E	3,00				3,00			PC-9
6	Theory of Pseudo-random Generators	E	3,00				3,00			PC-12, PC-14, PC-16
7	Public Key Infrastructure (offered in a foreign language)	E	3,00					3,00		PC-12, PC-13, PC-18
8	Methods of Algebraic Geometry in Cryptography	E	4,00					4,00		PC-15, PC-18
13	Programming of Information Security Algorithms	C	4,00					4,00		PC-12, PC-14, PC-6, PC-8
14	Academic English Writing (offered in a foreign language)	C	3,00					3,00		, GPC-6
15	Parallel Computing	C	6,00					6,00		PC-10, PC-8
Block 2. Practice(s), Project and(or) Research work			42,00				14,00	4,00	24,00	
Проектная деятельность			9,00				9,00			
1	Project Seminar	C	3,00				3,00			, GPC-4, GPC-5, GPC-8, GPC-9
2	Проект	E	6,00				6,00			, 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
Internships			29,00				5,00		24,00	
1	Work Experience Internship	C	5,00				5,00			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	Подготовка выпускной квалификационной работы	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
	Research Work		4,00					4,00	
1	Research Seminar	C	4,00					4,00	, GPC-10, GPC-11, GPC-8
	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. 13.01.2023

Dean KROUK E.A. 14.01.2023

Head of Centre for
Educational Model Design LEPESHKIN I.A. 25.01.2023

* Subject type:

Compulsory course C

Elective course E