National Research University Higher School of Economics (HSE)

Curriculum

Field of study 11.03.02 Infocommunication Technologies and Systems

Educational Programme "Infocommunication Technologies and Systems"

Specializations: "Electronics of Infocommunication Technologies and Communication Systems", "Info Telecommunication Technologies", "Infocommunication Technologies and Cyber-physical Systems", "Quantum Infocommunication Technologies"

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

4 th, 2024/2025 academic year

Length of Programme: 4 years
Years of Study: 2021/2022 - 2024/2025
Mode of Study: Full Time
Degree: Bachelor's degree

Block Code	Course	Subject type	Department	Credits	Total Academic Hours	Contact Hours	Allocation of Contact Hours				Additional Information
							1	2	3	4	
	Degree Progamme			**60,00**	**1 368**	**490**	**154**	**140**	**192**	**4**	
	Data Culture			**1,00**	**38**	**2**			**2**		
1	Data Science, AI and Generative Models Independent Test. Intermediate	C	отдел развития цифровых компетенций	1,00	38	2			2A		Online Course
	Major			**42,00**	**684**	**450**	**140**	**124**	**186**		
	Elective Professional Block (Major)			**42,00**	**684**	**450**	**140**	**124**	**186**		
	Блоки дисциплины по выбору			**24,00**		**266**	**86**	**80**	**100**		
	Infocommunication Technologies and Cyber-physical Systems			**24,00**	**912**	**266**	**86**	**80**	**100**		
1	Antenna systems and devices	C	School of Electronic Engineering	4,00	152	30	30A				
2	Information security and protection of infocommunication systems	C	School of Electronic Engineering	4,00	152	40			40A		
3	Optoelectronic infocommunication systems	C	School of Electronic Engineering	4,00	152	40		20	20A		
4	IoT hardware design foundamentals	C	School of Electronic Engineering	4,00	152	28	28A				
5	Foundations of the theory of automatic control in technical systems	C	School of Electronic Engineering	4,00	152	72		32	40A		

№	Course		School							Notes
6	Electromagnetic compatibility infocommunication and related systems	C	School of Electronic Engineering	4,00	152	56	28	28A		
	Info Telecommunication Technologies			**24,00**	**912**	**282**	**124**	**68**	**90**	
1	Information security and protection of infocommunication systems	C	School of Electronic Engineering	4,00	152	40			40A	
2	Fundamentals of the Internet of Things	C	School of Electronic Engineering	4,00	152	52	52A			
3	Fundamentals of SDR System Design	C	School of Electronic Engineering	4,00	152	52	52A			
4	Basics of Designing Satellite and Radio Relay Communication Systems	C	School of Electronic Engineering	4,00	152	44		20	24A	
5	Mobile Network Design	C	School of Electronic Engineering	4,00	152	50		24	26A	
6	Wi-Fi Network Design	C	School of Electronic Engineering	4,00	152	44	20	24A		
	Квантовые технологии инфокоммуникаций			**24,00**	**912**	**272**	**80**	**92**	**100**	
1	Introduction to quantum algoritms	C	School of Electronic Engineering	4,00	152	40			40A	
2	Introduction to quantum processes and devices	C	School of Electronic Engineering	4,00	152	28	28A			Foreign language
3	Quantum solid systems	C	School of Electronic Engineering	4,00	152	52	24	28A		
4	Manetism and spintronics, magnonics, photonics	C	School of Electronic Engineering	4,00	152	52		28	24A	
5	Devices for quantum computing and communication	C	School of Electronic Engineering	4,00	152	72		36	36A	
6	Photonic integrated circuits for quantum computing, communications and metrology	C	School of Electronic Engineering	4,00	152	28	28A			
	Электроника инфокоммуникационных технологий и систем связи			**24,00**	**912**	**238**	**74**	**64**	**100**	
1	Integrated circuits for telecommunication devices	C	School of Electronic Engineering	4,00	152	36		16	20A	
2	Communication Devices Components	C	School of Electronic Engineering	4,00	152	56	28	28A		
3	Devices of functional electronic	C	School of Electronic Engineering	4,00	152	28	28A			
4	Design of electronic components and devices for telecommunication equipment	C	School of Electronic Engineering	4,00	152	40			40A	
5	Digital Devices and Microprocessors	C	School of Electronic Engineering	4,00	152	38	18	20A		
6	Power Supply Devices and Telecommunications	C	School of Electronic Engineering	4,00	152	40			40A	
	Дисциплины по выбору ОП			**14,00**	**532**	**122**	**34**	**24**	**64**	
1	Wireless Communication Systems	C	School of Electronic Engineering	4,00	152	40			40A	

№	Subject	*	Department							Notes
2	Machine Learning	C	School of Electronic Engineering	3,00	114	48			24	24A	
3	Basics in computer vision	C	School of Electronic Engineering	3,00	114	6	6A				Online Course, Foreign language
4	Digital systems for information transmitting and receiving	C	School of Electronic Engineering	4,00	152	28	28A				
	Научно-исследовательские и проектные семинары			**4,00**	**152**	**62**	**20**	**20**	**22**		
1	Project Seminar	C	School of Electronic Engineering	4,00	152	62	20	20	22A		
	English			**1,00**	**38**	**2**				**2**	
	Optional Courses										
1	Academic Writing (Engish)	O		2,00	76	48		28		20A	Foreign language, Credits only to the cumulative rating
	Examinations			**1,00**	**38**	**2**				**2**	
1	Project Proposal	C	School of Electronic Engineering	1,00	38	2				2A	Foreign language
	Final State Certification (FSC)			**3,00**	**114**	**2**				**2**	
	Thesis Work			**3,00**	**114**	**2**				**2**	
1	Presenting of Graduation Thesis	C		3,00	114	2				2A	
	General Courses			**4,00**	**152**	**30**	**14**	**16**			
	Optional General Courses			**4,00**	**152**	**30**	**14**	**16**			
1	Economics	C	Department of Theoretical Economics	4,00	152	30	14	16A			Online Course
	Internship			**9,00**	**342**	**4**			**2**	**2**	
	Research Internship			**4,00**	**152**	**2**				**2**	
1	Graduation Internship	C		4,00	152	2			2A		
	Project Internship			**5,00**	**190**	**2**				**2**	
1	Preparation of Graduation Thesis	C		5,00	190	2				2	

Curriculum agreed:

Academic Supervisor	ELIZAROV A.A.	26.02.2024
Dean	KROUK E.A.	26.02.2024
Head of Centre for Educational Model Design	LEPESHKIN I.A.	17.04.2024

* Subject type:
Compulsory course   C
Optional course   O