National Research University Higher School of Economics (HSE)

Curriculum

Field of study 11.04.04 Electronics and Nanoelectronics

Educational Programme "Applied Electronics and Photonics"

Trajectories: "Engineering in Electronics, Micro- and Nanoelectronics", "Quantum Nanoelectronics and Materials", "Technological Foundations of Quantum Computing and Quantum Communications"

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

1 st, 2025/2026 academic year

APPROVED
29.04.2025
Vice Rector

ROSHCHIN S.Y.

Signed with EDS

Length of Programme: 2 years
Years of Study: 2025/2026 - 2026/2027
Mode of Study: Full Time
Degree: Master's degree / MBA

Block Code	Course	Subject type	Department	Credits	Total Academic Hours	Contact Hours	Allocation of Contact Hours				Additional Information
							1	2	3	4	
	Degree Programme			**60,00**	**2 280**	**456**	**90**	**90**	**138**	**140**	
	Engineering in Electronics, Micro- and Nanoelectronics (Applied track)			**60,00**	**2 280**	**458**	**90**	**90**	**138**	**140**	
	Major			**42,00**	**1 596**	**384**	**74**	**74**	**118**	**118**	
1	Automated Systems to Ensure Reliability and Quality of Electronic Means	C	School of Electronic Engineering	6,00	228	60			30	30A	
2	Analog and Digital Devices	C	School of Electronic Engineering	12,00	456	104	22	22A	30	30A	
3	Computer-based Measurement Technologies	C	School of Electronic Engineering	6,00	228	68			34	34A	
4	Micro- and Nanoelectronics	C	School of Electronic Engineering	6,00	228	48	24	24A			
5	Fundamentals of conceptual design of innovations	C	School of Electronic Engineering	6,00	228	56	28	28A			
6	Design and Modeling of the Element Base of Microelectronics	C	School of Electronic Engineering	6,00	228	48			24	24A	
	Key Seminars			**6,00**	**228**	**72**	**16**	**16**	**20**	**20**	
1	Engineering in Electronics, Micro- and Nanoelectronics (mentor's workshop)	C	School of Electronic Engineering	3,00	114	36	8	8	10	10A	
2	Research and Design Seminar	C	School of Electronic Engineering	3,00	114	36	8	8	10	10A	
	Magolego			**6,00**	**228**						
1	All-university Pool MAGOLEGO Courses»	C		6,00	228						

	Internship			**6,00**	**228**	**2**				**2**	
	Free			**6,00**	**228**	**2**				**2**	
1	Project	C		6,00	228	2				2A	
	Quantum Nanoelectronics and Materials (Applied track)			**60,00**	**2 280**	**416**	**86**	**86**	**122**	**124**	
	Major			**42,00**	**1 596**	**344**	**70**	**70**	**102**	**102**	
1	Analytical and Numerical Modeling	C	School of Electronic Engineering	6,00	228	48	24A	24A			
2	Labs in quantum photonics and cryptography	C	School of Electronic Engineering	6,00	228	48			24	24A	
3	Materials and Instruments for Nano- and Optoelectronics	C	School of Electronic Engineering	6,00	228	48	24	24A			
4	Solid-state Electronics Materials	C	School of Electronic Engineering	6,00	228	48			24	24A	
5	Applied Quantum and Statistical Physics	C	School of Electronic Engineering	12,00	456	104	22A	22	30A	30A	
6	Experimental Methods of Photonics	C	School of Electronic Engineering	6,00	228	48			24	24A	
	Key Seminars			**6,00**	**228**	**72**	**16**	**16**	**20**	**20**	
1	Quantum nanoelectronics and materials (mentor workshop)	C	School of Electronic Engineering	3,00	114	36	8	8	10	10A	
2	Research and Design Seminar	C	School of Electronic Engineering	3,00	114	36	8	8	10	10A	
	Magolego			**6,00**	**228**						
1	All-university Pool MAGOLEGO Courses»	C		6,00	228						
	Internship			**6,00**	**228**					**2**	
	Free			**6,00**	**228**					**2**	
1	Project	C		6,00	228					2A	
	Technological Foundations of Quantum Computing and Quantum Communications (Applied track)			**60,00**	**2 280**	**418**	**86**	**86**	**122**	**124**	
	Major			**42,00**	**1 596**	**344**	**70**	**70**	**102**	**102**	
1	Analytical and Numerical Modeling	C	School of Electronic Engineering	6,00	228	48	24A	24A			
2	Labs in quantum photonics and cryptography	C	School of Electronic Engineering	6,00	228	48			24	24A	
3	Materials and Instruments for Nano- and Optoelectronics	C	School of Electronic Engineering	6,00	228	48	24	24A			
4	Solid-state Electronics Materials	C	School of Electronic Engineering	6,00	228	48			24	24A	
5	Applied Quantum and Statistical Physics	C	School of Electronic Engineering	12,00	456	104	22A	22	30A	30A	
6	Experimental Methods of Photonics	C	School of Electronic Engineering	6,00	228	48			24	24A	
	Key Seminars			**6,00**	**228**	**72**	**16**	**16**	**20**	**20**	
1	Research and Design Seminar	C	School of Electronic Engineering	3,00	114	36	8	8	10	10A	

2	Technological Foundations of Quantum Computing and Quantum Communications (mentor's workshop)	C	School of Electronic Engineering	3,00	114	36	8	8	10	10A	
	Magolego			**6,00**	**228**						
1	All-university Pool MAGOLEGO Courses»	C		6,00	228						
	Internship			**6,00**	**228**	**2**				**2**	
	Free			**6,00**	**228**	**2**				**2**	
1	Project	C		6,00	228	2				2A	

Curriculum agreed:

Academic Supervisor	Юрин А.И.	18.04.2025
Dean	Kovalenko D.G.	18.04.2025
Head of Centre for Educational Model Design	LEPESHKIN I.A.	28.04.2025

* Subject type:

Compulsory course	C