



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 05.03.02 Geography

Educational Programme "Geography of Global Changes and Geoinformation Technology"

Specializations: " Geoinformation Technology and Spatial Modeling", "Global Environmental and Climate Change", "Human Geography and Spatial Decisions"

Implementing unit: Faculty of Geography and Geoinformation Technology, HSE - Moscow

Years of Study: 2025/2026 - 2028/2029

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED

07.05.2025

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		153,00	44,00	39,00	34,00	36,00	
	Core Professional Block (Major)		97,00	40,00	32,00	13,00	12,00	
	Math Disciplines		14,00	8,00	6,00			
1	Physics of Energy	C	3,00	3,00				GPC-1, PC-2, PC-5
2	Introduction to Advanced Mathematics	C	5,00	5,00				GPC-1, PC-1
3	Theory of Probability and Mathematical Statistics	C	6,00		6,00			GPC-1, PC-1
	Disciplines on the basics of physical and social geography		57,00	22,00	18,00	9,00	8,00	
	Disciplines on the basics of social geography		29,00	10,00	10,00	9,00		
1	Geography of population	C	5,00	5,00				PC-15
2	Basics of Human Geography and Area Studies	C	5,00	5,00				GPC-3, PC-14
3	Theories of Urban Development	C	3,00		3,00			GPC-3, PC-15
4	Geography of Rural Space	C	3,00		3,00			PC-15
5	Political and Sociological Approaches in Geography	C	4,00		4,00			PC-17
6	Spatial Organization of the World Economy (offered in a foreign language)	C	3,00			3,00		PC-13
7	Socio-ecological Systems Evolution	C	6,00			6,00		PC-15
	Disciplines on the basics of physical geography		28,00	12,00	8,00		8,00	
1	Earth System Components: Atmosphere and Hydrosphere	C	5,00	5,00				PC-1, PC-5
2	Earth System Components: Lithosphere, Pedosphere and Biosphere	C	7,00	7,00				PC-1, PC-5

3	Earth System Components: Ocean and Cryosphere	C	4,00		4,00			PC-1, PC-5
4	Earth System Components: Paleogeography and Landscape Ecology	C	4,00		4,00			PC-1, PC-5
5	Global Changes and Sustainable Development Strategies	C	5,00				5,00	PC-3
6	Development of Environmental Policies (offered in a foreign language)	C	3,00				3,00	PC-15, PC-2
	Disciplines on the basics of digital cartography, geoinformation technologies and remote sensing methods		26,00	10,00	8,00	4,00	4,00	
1	Remote Sensing Fundamentals	C	5,00	5,00				PC-8, PC-9
2	Digital Cartography and Geographic Information Systems	C	5,00	5,00				PC-10, PC-8, PC-9
3	Spatial Data Integration, Visualization and Analysis	C	5,00		5,00			GPC-4, GPC-5, PC-10, PC-9
4	Remote Sensing Fundamentals: Applied Aspects	C	3,00		3,00			PC-8, PC-9
5	Spatial Modeling of Socio-ecological Systems	C	4,00			4,00		PC-15, PC-8, PC-9
6	Digital Twins and AI in Geography	C	4,00				4,00	GPC-2, GPC-4, PC-8, PC-9
	Elective Professional Block (Major)		56,00	4,00	7,00	21,00	24,00	
	Specialization Disciplines		20,00			12,00	8,00	
	Геоинформационные технологии и пространственное моделирование		20,00			12,00	8,00	
1	Thematic Interpretation of Remote Data	C	3,00			3,00		PC-10, PC-9
2	Spatial Data Management	C	3,00			3,00		PC-7, PC-8, PC-9
3	Open GIS	C	3,00			3,00		PC-12, PC-7, PC-9
4	Thematic Mapping	C	3,00			3,00		PC-10, PC-8
5	3D Analysis and Digital Models	C	4,00				4,00	PC-11, PC-9
6	Spatial Data for Operational Management and Territorial Planning	C	4,00				4,00	PC-10, PC-16, PC-8
	Общественная география		20,00			12,00	8,00	
1	Theory and Methods of Cultural Geography	C	3,00			3,00		PC-14, PC-16
2	Theory and Methods of Political Geography	C	3,00			3,00		PC-17, PC-18
3	Fundamentals of Public and Local Governance	C	3,00			3,00		PC-15, PC-17
4	Economic and Geographical Analysis of Industries	C	3,00			3,00		PC-13, PC-14
5	Regional Policy and Regional Strategies	C	4,00				4,00	PC-16, PC-17
6	Spatial Planning	C	4,00				4,00	PC-17, PC-18
	Глобальные изменения природной среды и климата		20,00			12,00	8,00	
1	Research Seminar of Institute of Geography the Russian Academy of Sciences	C	5,00			5,00		PC-3, PC-4, PC-5
2	Modeling Ecosystem Processes	C	3,00			3,00		PC-2, PC-3
3	AI in Earth Science	C	4,00			4,00		PC-4, PC-5
4	Geophysical and Geochemical Methods in Geography	C	4,00				4,00	PC-1, PC-6

5	Introduction to Climate System Modeling	C	4,00				4,00	PC-1, PC-3, PC-5
	Общие дисциплины по выбору		18,00		4,00	6,00	8,00	
	Elective Subjects for the 2nd Year		4,00		4,00			
1	Spatial Information Crowdsourcing	E	4,00		4,00			PC-11, PC-9
2	Economic Geography and Regional Analysis	E	4,00		4,00			PC-15, PC-17
3	Physical Geography Research Methods	E	4,00		4,00			PC-2, PC-5, PC-6
	Elective Subjects for the 3rd Year		6,00			6,00		
	Block 1		3,00			3,00		
1	Geomarketing and Analysis of Territory	E	3,00			3,00		PC-11, PC-9
2	Legal Framework for Spatial Development	E	3,00			3,00		PC-16, PC-18
3	Natural Resources Assessment	E	3,00			3,00		PC-5, PC-6
	Block 2		3,00			3,00		
1	Map Design	E	3,00			3,00		PC-10, PC-9
2	Basics of Demography and Population Geography	E	3,00			3,00		PC-13, PC-15
3	Natural Risks Assessment and Management	E	3,00			3,00		PC-4, PC-6
	Elective Subjects for the 4th Year		8,00				8,00	
	Block 1		4,00				4,00	
1	Computer Vision and Machine Learning in Remote Sensing	E	4,00				4,00	PC-10, PC-8, PC-9
2	Institutional Economics	E	4,00				4,00	PC-14, PC-15
3	Internet of Things for Environmental Monitoring	E	4,00				4,00	PC-2, PC-4
	Block 2		4,00				4,00	
1	Web Cartography and Web-GIS	E	4,00				4,00	PC-10, PC-11, PC-9
2	Statistical Methods for Spatial Analysis	E	4,00				4,00	PC-16, PC-18
3	Urban Climate Modeling	E	4,00				4,00	PC-1, PC-3, PC-5
	Seminars and Career Guidance Disciplines		18,00	4,00	3,00	3,00	8,00	
1	Research Seminar "Introduction to Geography"	C	4,00	4,00				GPC-2
2	Research Seminar «Basics of Geographical Research»	C	3,00		3,00			GPC-2, GPC-3
3	Research Seminar "Fundamentals of Project Management"	C	3,00			3,00		GPC-2, GPC-3, UC-2, UC-3, UC-6
4	Research Seminar "Theoretical Geography"	C	4,00				4,00	GPC-2, GPC-3, GPC-6
5	Research Seminar "Science Communications"	C	4,00				4,00	GPC-2, GPC-6, PC-16
	Internship		42,00	6,00	8,00	14,00	14,00	
	Fixed		35,00	6,00	8,00	14,00	7,00	
1	Work Experience Internship	C	7,00			7,00		PC-1, PC-2, PC-5, UC-1
2	Graduation Internship	C	7,00				7,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, PC-1, PC-10, PC-13, PC-14, PC-15, PC-16, PC-2, PC-3, PC-4, PC-7, PC-8, PC-9, UC-1, UC-3, UC-4, UC-6

3	Geographic Research Methods Project	C	4,00		4,00			GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, PC-1, PC-13, PC-14, PC-15, PC-16, PC-2, PC-3, UC-1, UC-3, UC-4, UC-6
4	Project on Spatial Data Analysis Method	C	7,00			7,00		GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, PC-1, PC-13, UC-2
5	Field Practice 1	C	6,00	6,00				GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, PC-14, PC-15, PC-2, PC-3, PC-8, PC-9, UC-1, UC-3, UC-4, UC-6
6	Field Practice 2	C	4,00		4,00			GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, PC-1, PC-13, PC-14, PC-15, PC-2, PC-3, PC-7, PC-8, PC-9, UC-1, UC-3, UC-4, UC-6
	Free							
	Preparation of the Graduate Thesis		7,00				7,00	
1	Preparation of Graduation Thesis	C	7,00				7,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, 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, UC-1, UC-2, UC-4
	General Courses		14,00	10,00		1,00	3,00	
	Core General Courses		2,00	1,00		1,00		
1	Safe Living Basics	C	1,00	1,00				UC-10, UC-11, UC-8, UC-9
2	Physical Training	C	1,00			1,00		UC-7
	Optional General Courses		12,00	9,00			3,00	
1	Foundations of Russian Statehood	C	2,00	2,00				UC-10
2	Russian History	C	4,00	4,00				UC-5
3	Economics	C	3,00	3,00				UC-9
4	Law	C	3,00				3,00	UC-10
	Minor		20,00		10,00	10,00		
1	Minor	C	20,00		10,00	10,00		UC-1, UC-2, UC-3
	Language and Communication		1,00				1,00	
	Examinations		1,00				1,00	
1	Independent English Exam (offered in a foreign language)	C						UC-4
2	Project Proposal (offered in a foreign language)	C	1,00				1,00	GPC-6, UC-4
3	Independent Russian Exam	C						UC-4
4	English Language Integrative Exam (offered in a foreign language)	C						UC-4
	Optional Courses							
1	English (offered in a foreign language)	O	14,00	8,00	6,00			UC-4
2	Academic English Writing (offered in a foreign language)	O	2,00				2,00	UC-4
	Data Culture		4,00		3,00	1,00		
1	Independent Digital Literacy Test	C						GPC-4

2	Independent Programming Test. Intermediate	C						GPC-4
3	Data Science, AI and Generative Models Independent Test. Intermediate	C	1,00			1,00		GPC-4
4	External Examinations on Digital Skills. Entry-level	C						GPC-4
5	External Examinations on Digital Skills. Intermediate Level	C						GPC-4
6	Introduction to Python for Data Science	C	3,00		3,00			GPC-4, PC-1, PC-3
7	External Examinations on Digital Skills. Final Level	C						GPC-4
	Final State Certification (FSC)		6,00				6,00	
	Thesis Work		6,00				6,00	
1	Presenting of Graduation Thesis	C	6,00				6,00	GPC-1, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, 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, UC-1, UC-2

Curriculum agreed:

Academic Supervisor	Матасов В.М.	22.04.2025
Dean	KURICHEV N.K.	22.04.2025
Head of Centre for Educational Model Design	LEPESHKIN I.A.	30.04.2025

* Subject type:

Compulsory course	C
Elective course	E
Optional course	O