



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 01.03.02 Applied Mathematics and Information Science,
38.03.05 Business Informatics,
09.03.04 Software Engineering

Educational Programme "Computer Science and Technologies"

Specializations: "Computer Science and Optimization", "Decision Support Information Systems", "Design and Development of Enterprise Information Systems", "Development and Maintenance of High-load Systems", "Industrial IoT", "Requirements Management and Information Systems Integration in Business"

Implementing unit: Faculty of Informatics, Mathematics and Computer Sciences, HSE - Nizhny Novgorod

Years of Study: 2023/2024 - 2026/2027

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED

23.05.2023

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		164,00	53,00	37,00	36,00	38,00	
	Core Professional Block (Major)		101,00	49,00	37,00		15,00	
1	Calculus	C	8,00	8,00				GPC-1.SEN, GPC-3.SEN, GPC-4.AMI, GPC-8.SEN, PC-11, PC-20, PC-7, UC-1, UC-2
2	Discrete Mathematics	C	8,00	8,00				GPC-1.SEN, GPC-3.SEN, GPC-4.AMI, GPC-8.SEN, PC-11, PC-20, PC-7, UC-1, UC-2
3	Software Engineering	C	4,00	4,00				GPC-3.AMI, GPC-4.AMI, PC-10, PC-14, PC-16, PC-2, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-5
4	Linear Algebra and Geometry	C	8,00	8,00				GPC-1.SEN, GPC-3.SEN, GPC-4.AMI, GPC-8.SEN, PC-11, PC-20, PC-7, UC-1, UC-2
5	General Algebra	C	5,00	5,00				GPC-1.SEN, GPC-3.SEN, GPC-4.AMI, GPC-8.SEN, PC-11, PC-20, PC-7, UC-1, UC-2

6	C/C++ Programming	C	8,00	8,00			GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-10, PC-14, PC-16, PC-17, PC-18, PC-19, PC-20, PC-3, PC-5, PC-6, UC-1, UC-2, UC-5, UC-8
7	Probability Theory and Mathematical Statistics	C	6,00	6,00			GPC-1.SEN, GPC-3.SEN, GPC-4.AMI, GPC-8.SEN, PC-11, PC-20, PC-7, UC-1, UC-2
8	Data Management (offered in a foreign language)	C	6,00	6,00			GPC-1.BUI, GPC-3.AMI, GPC-4.AMI, PC-1, PC-10, PC-16, PC-17, PC-18, PC-19, PC-6, PC-7, PC-8, UC-1, UC-2, UC-5
9	Computer Networks	C	5,00	5,00			GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-16, PC-2, PC-20, PC-5, PC-8, UC-1, UC-2
10	Java Programming	C	5,00	5,00			GPC-3.AMI, GPC-4.SEN, PC-10, PC-14, PC-16, PC-17, PC-18, PC-19, PC-2, PC-3, PC-5, PC-6, PC-8, UC-1, UC-2
11	Functional Programming	C	3,00	3,00			GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-10, PC-14, PC-16, PC-17, PC-18, PC-19, PC-2, PC-20, PC-3, PC-5, PC-6, PC-8, UC-1, UC-2
12	Computer Architecture and Operating Systems	C	3,00	3,00			GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-7.SEN, PC-1, PC-11, PC-16, PC-2, PC-20, PC-5, PC-8, UC-1, UC-2
13	Python Programming	C	3,00	3,00			GPC-3.SEN, GPC-4.AMI, PC-11, PC-16, PC-2, PC-20, PC-6, UC-1, UC-2
14	Technical Documentation Systems	C	3,00			3,00	GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, GPC-4.SEN, PC-1, PC-11, PC-14, PC-15, PC-16, PC-2, PC-3, PC-8, UC-1, UC-2
15	IT Project Management	C	7,00			7,00	GPC-1.SEN, GPC-2.SEN, GPC-3.AMI, GPC-7.SEN, GPC-8.SEN, PC-1, PC-16, PC-17, PC-18, PC-19, PC-2, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3, UC-4
16	Soft Skills	C	5,00			5,00	GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-12, PC-13, PC-16, PC-2, PC-20, PC-5, UC-1, UC-2
17	Data Analysis and Processing	C	6,00	6,00			GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-16, PC-17, PC-18, PC-19, PC-20, PC-5, PC-6, UC-1, UC-2

18	Algorithms and Data Structures	C	8,00	8,00				GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-11, PC-2, PC-20, PC-3, PC-5, PC-8, UC-1, UC-2
	Elective Professional Block (Major)		63,00	4,00		36,00	23,00	
	Дисциплины специализаций		54,00			33,00	21,00	
	Specialization 1: Requirements Management and Integration of Information Systems in Business (BI)		54,00			33,00	21,00	
1	Business Process Modelling	C	3,00			3,00		GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-2, PC-3, PC-5, PC-7, PC-8, UC-1, UC-2, UC-3
2	Simulation Modeling	C	3,00			3,00		GPC-3.BUI, PC-4, UC-1, UC-2
3	Organization Theory	C	3,00			3,00		PC-1, PC-8, UC-3
4	Entrepreneurship	C	3,00			3,00		PC-1, PC-3, PC-5
5	Information Systems and Organisations	C	3,00			3,00		GPC-3.BUI, PC-1, PC-5, PC-8, UC-1, UC-2
6	Requirements Management and Information Systems Design	C	3,00			3,00		GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-2, PC-8, UC-1, UC-2
7	Introduction to Information Security (offered in a foreign language)	C	3,00			3,00		GPC-3.BUI, PC-1, PC-3, PC-4, UC-1, UC-2
8	Financial and Managerial Accounting	C	3,00			3,00		GPC-1.BUI, PC-2, PC-5, PC-8, UC-1, UC-2, UC-3
9	Econometrics	C	3,00			3,00		GPC-1.BUI, PC-2, PC-4, PC-8, UC-1, UC-2
10	Management Theory and History	C	3,00			3,00		GPC-1.BUI, PC-2, PC-8, UC-1, UC-2
11	Strategic Management	C	3,00			3,00		GPC-1.BUI, GPC-2.BUI, PC-2, PC-8, UC-1, UC-2, UC-3
12	Enterprise Architecture	C	3,00				3,00	GPC-1.BUI, GPC-3.BUI, PC-2, UC-1, UC-2, UC-3, UC-4
13	Theory and Practice of IS Testing	C	3,00				3,00	GPC-3.BUI, PC-2, PC-3, PC-8, UC-1, UC-2
14	IP Quality Management	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-2, PC-8, UC-1, UC-2
15	Development in Business-Oriented Programming Languages ??and Low-Code	C	3,00				3,00	GPC-3.BUI, PC-1, PC-2, PC-3, PC-5, PC-8
16	Design Thinking	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-2, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6
17	Electronic Media of Exchange	C	3,00				3,00	GPC-3.BUI, PC-2, PC-3, PC-8, UC-1, UC-2
18	Operations Management	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, PC-1, PC-2, PC-8, UC-1, UC-2, UC-3
	Specialization 2: Computer Science and Optimization (CMI)		54,00			33,00	21,00	
1	Calculus	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11

2	Differential equations (offered in a foreign language)	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1
3	Stochastic Methods of Decision Making	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2, UC-9
4	Algorithms of Operations Research	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2, UC-9
5	Modeling of Financial Operations	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2, UC-9
6	Risks and random processes	C	5,00			5,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2
7	Operations Research	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2, UC-9
8	Continuous Optimization Methods	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2, UC-9
9	Matrix Computations	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, PC-11, UC-1
10	Applied Graph Theory	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, PC-11, UC-1
11	Computational Linear Algebra	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, PC-11, UC-1
12	Distributed Computing	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2
13	Introduction to multiple hypothesis testing procedures	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2
14	Computer System Architecture	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, GPC-5.AMI, PC-11, UC-1, UC-2
15	Algorithms for Working with External Memory	C	3,00				3,00	GPC-3.AMI, GPC-4.AMI, PC-11, UC-1, UC-2
	Specialization 3: Highly loaded systems (PI)		54,00			33,00	21,00	
1	Distributed Computing	C	4,00			4,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
2	Software Systems Architecture Design	C	4,00			4,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
3	Mobile Applications Development	C	5,00			5,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
4	Software Quality Assurance and Testing	C	5,00			5,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-18, PC-19, PC-20, UC-1
5	Web-Programming	C	5,00			5,00		PC-16, PC-20, UC-1, UC-2
6	DevOps Methods and Technologies	C	4,00			4,00		GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-20, UC-1, UC-2

7	Requirements Analysis and Development (offered in a foreign language)	C	3,00			3,00		GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-7.SEN, GPC-8.SEN, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
8	Interface Design (UI/UX)	C	3,00			3,00		PC-16, PC-20, UC-1
9	Designing Fault-Tolerant Systems	C	3,00			3,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
10	Computer Systems Security	C	3,00			3,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-20, UC-1, UC-2
11	Multithreaded programming	C	3,00			3,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2, UC-5, UC-8
12	Methods and Systems for Processing Big Data	C	3,00			3,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-20, UC-1, UC-2
13	Algorithms and Data Structures 2	C	3,00			3,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-20, UC-1, UC-2
14	Introduction to blockchain	C	3,00			3,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-20, UC-1, UC-2
15	Low-code Application Development Systems	C	3,00			3,00		GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-18, PC-19, PC-20, UC-1, UC-2, UC-3
	Specialization 4: Design and development of corporate information systems (BI+PI)		54,00			33,00	21,00	
1	Business Process Modelling	C	4,00			4,00		GPC-1.BUI, GPC-2.BUI, PC-1, PC-2, PC-3, PC-5, PC-7, PC-8, UC-1, UC-2, UC-3
2	Simulation Modeling	C	3,00			3,00		GPC-1.SEN, GPC-3.BUI, PC-16, PC-8, UC-1, UC-2
3	Organization Theory	C	3,00			3,00		PC-1, PC-8, UC-3
4	Requirements Management and Information Systems Design (offered in a foreign language)	C	4,00			4,00		GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.BUI, PC-1, PC-16, PC-18, PC-19, PC-2, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3
5	Information Systems and Organisations	C	4,00			4,00		GPC-3.BUI, GPC-4.BUI, PC-1, PC-16, PC-17, PC-18, PC-19, PC-2, PC-5, PC-6, PC-8, UC-1, UC-2
6	Entrepreneurship	C	3,00			3,00		GPC-1.BUI, PC-1, PC-16, PC-17, PC-18, PC-19, PC-3, PC-5

7	Computer security	C	3,00			3,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-16, PC-20, PC-3, PC-4, PC-5, PC-8, UC-1, UC-2
8	Financial and Managerial Accounting	C	3,00			3,00		GPC-1.BUI, PC-2, PC-5, PC-8, UC-1, UC-2, UC-3
9	Strategic Management	C	3,00			3,00		GPC-1.BUI, GPC-2.BUI, PC-19, PC-2, PC-8, UC-1, UC-2, UC-3
10	Workshop on ERP and CRM systems	C	3,00			3,00		GPC-3.BUI, PC-1, PC-16, PC-18, PC-19, PC-2, PC-20, PC-3, PC-5, PC-6, PC-8
11	Enterprise Architecture	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, PC-3, UC-1, UC-2, UC-3, UC-4
12	Automation of End-to-End Processes of Manufacturing Enterprise	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-16, PC-17, PC-18, PC-19, PC-2, PC-3, PC-5, PC-6, PC-7, PC-8, UC-1, UC-2, UC-3
13	IP Quality Management	C	3,00				3,00	GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-16, PC-18, PC-19, PC-2, PC-20, PC-5, PC-8, UC-1, UC-2
14	Information Technology to Improve Business Efficiency in the 1C Ecosystem	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-16, PC-17, PC-18, PC-19, PC-2, PC-3, PC-5, PC-6, PC-7, PC-8, UC-1, UC-2, UC-3
15	Development in Business-Oriented Programming Languages ??and Low-Code	C	3,00				3,00	GPC-3.BUI, PC-1, PC-16, PC-18, PC-19, PC-2, PC-20, PC-3, PC-5, PC-6, PC-8
16	Financial Planning and Budgeting Systems	C	3,00				3,00	GPC-1.BUI, PC-16, PC-18, PC-19, PC-2, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3
17	Operations Management	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, PC-1, PC-19, PC-2, PC-8, UC-1, UC-2, UC-3
	Specialization 5: Decision Support Information Systems (BI+PMI)		54,00			33,00	21,00	
1	Entrepreneurship	C	3,00			3,00		GPC-1.BUI, GPC-2.BUI, GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-2, PC-8, UC-1, UC-2
2	Computer System Architecture	C	3,00			3,00		GPC-1.BUI, GPC-2.BUI, GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-2, PC-8, UC-1, UC-2
3	Management and Modeling in Decision Support Information Systems	C	3,00			3,00		GPC-1.AMI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-11, PC-14, PC-15, PC-2, PC-3, PC-5, PC-7, PC-8, UC-1, UC-2
4	Organization Theory	C	3,00			3,00		PC-1, PC-8, UC-3
5	Operations Research	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-6, PC-7, PC-8, UC-1, UC-2, UC-9

6	Strategic Management	C	3,00			3,00		GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-6, PC-7, PC-8, UC-1, UC-2, UC-9
7	Stochastic Methods of Decision Making	C	4,00			4,00		GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-6, PC-7, PC-8, UC-1, UC-2, UC-9
8	Decision Support IC Lifecycle Management	C	4,00			4,00		GPC-1.AMI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-11, PC-14, PC-15, PC-2, PC-8, UC-1, UC-2
9	Decision Models Based on Linguistic Information (offered in a foreign language)	C	3,00			3,00		GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-6, PC-7, PC-8, UC-1, UC-2, UC-9
10	Abstract Algebra	C	3,00			3,00		GPC-3.AMI, GPC-4.AMI, PC-11, PC-7, UC-1, UC-2
11	Systems Analysis	C	3,00				3,00	GPC-1.BUI, GPC-2.BUI, GPC-3.AMI, GPC-4.AMI, PC-1, PC-11, PC-2, PC-8, UC-1, UC-2
12	Computer security	C	3,00				3,00	GPC-3.BUI, GPC-4.AMI, PC-1, PC-3, PC-4, PC-8, UC-1, UC-2
13	Human Machine Interfaces Design	C	3,00				3,00	GPC-3.BUI, PC-1, PC-11, PC-14, PC-15, PC-2, PC-3, PC-5, PC-8, UC-1
14	Financial Planning and Budgeting Systems	C	3,00				3,00	GPC-1.BUI, PC-16, PC-18, PC-19, PC-2, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3
15	Design Thinking	C	3,00				3,00	GPC-1.AMI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-15, PC-2, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6
16	Methods and Systems for Processing Big Data	C	3,00				3,00	GPC-1.BUI, GPC-3.AMI, GPC-4.AMI, PC-11, PC-2, PC-3, PC-8, UC-1, UC-2
17	Управление качеством ИС поддержки принятия решений	C	3,00				3,00	GPC-1.AMI, GPC-2.BUI, GPC-3.BUI, PC-1, PC-11, PC-14, PC-15, PC-2, PC-8, UC-1, UC-2
	Specialization 6: Industrial Internet of Things (Industrial IoT) (PMI + PI)		54,00			33,00	21,00	
1	Distributed Computing	C	4,00			4,00		GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-11, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
2	Computer security	C	3,00			3,00		GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-7.SEN, PC-15, PC-16, PC-20, UC-1, UC-2
3	Operations Research	C	4,00			4,00		GPC-1.SEN, GPC-3.AMI, GPC-4.AMI, PC-11, PC-20, UC-1, UC-2, UC-9
4	Embedded Systems Programming	C	6,00			6,00		GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-10, PC-14, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2, UC-5, UC-8

5	Requirements Analysis and Development (offered in a foreign language)	C	3,00			3,00		GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, PC-16, PC-18, PC-19, PC-20, UC-1, UC-2, UC-3
6	Designing Fault-Tolerant Systems	C	4,00			4,00		GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-11, PC-14, PC-15, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
7	Interface Design (UI/UX)	C	4,00			4,00		PC-11, PC-14, PC-15, PC-16, PC-20, UC-1
8	Network Technologies	C	5,00			5,00		GPC-3.AMI, GPC-4.AMI, GPC-8.SEN, PC-11, PC-16, UC-1, UC-2
9	Multithreaded programming	C	3,00				3,00	GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-10, PC-14, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2, UC-5, UC-8
10	IP Quality Management	C	3,00				3,00	GPC-1.AMI, GPC-2.SEN, GPC-3.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-18, PC-19, PC-20, UC-1
11	Operations Management	C	3,00				3,00	GPC-1.AMI, PC-19, UC-1, UC-3
12	Data Mining	C	3,00				3,00	GPC-2.SEN, GPC-3.AMI, GPC-4.AMI, PC-11, PC-20, UC-1, UC-2, UC-9
13	Stochastic Methods of Decision Making	C	3,00				3,00	GPC-2.SEN, GPC-3.AMI, GPC-4.AMI, PC-11, PC-20, UC-1, UC-2, UC-9
14	Cloud IoT Technologies	C	3,00				3,00	GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-7.SEN, PC-15, PC-16, PC-20, UC-1, UC-2
15	Development of System Interfaces for the Industrial Internet	C	3,00				3,00	PC-11, PC-14, PC-15, PC-16, PC-20, UC-1
	Research Seminar and/or Project Seminar		9,00	4,00		3,00	2,00	
1	Project Seminar	C	2,00				2,00	GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-16, PC-17, PC-2, PC-20, PC-3, PC-5, PC-6, PC-7, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-8, UC-9
2	Research Seminar "Alumni Initiative: Case Studies"	C	3,00			3,00		GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-16, PC-17, PC-20, PC-3, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-8, UC-9

3	Research Seminar "Introduction in Specialty"	C	2,00	2,00				GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-3, PC-6, PC-7, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-8, UC-9
4	Scientific-Practical Seminar "Digital Literacy"	C	2,00	2,00				GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-3, PC-6, PC-7, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-8, UC-9
	Internship		36,00		9,00	10,00	17,00	
	Professional Internship		6,00		3,00	3,00		
1	Educational Internship	C	3,00		3,00			GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-8.SEN, PC-11, PC-16, PC-17, PC-20, PC-3, PC-5, PC-6, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
2	Work Experience Internship	C	3,00			3,00		GPC-1.BUI, GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-10, PC-11, PC-15, PC-16, PC-17, PC-20, PC-3, PC-5, PC-6, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
	Project Internship		10,00		2,00	2,00	6,00	
1	Project	C	10,00		2,00	2,00	6,00	GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-10, PC-16, PC-17, PC-18, PC-19, PC-2, PC-20, PC-3, PC-4, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
	Research Internship		20,00		4,00	5,00	11,00	
1	Preparation of Graduation Thesis	C	6,00				6,00	GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, PC-1, PC-10, PC-11, PC-14, PC-15, PC-16, PC-2, PC-20, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
2	Курсовая междисциплинарная научно-исследовательская работа	C	4,00		4,00			GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-12, PC-13, PC-16, PC-17, PC-18, PC-19, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8

3	Курсовая работа	C	5,00			5,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-12, PC-13, PC-16, PC-17, PC-18, PC-19, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
4	Graduation Internship	C	5,00				5,00	GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, PC-11, PC-15, PC-16, PC-17, PC-18, PC-19, PC-20, PC-3, PC-5, PC-6, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
	General Courses		14,00	7,00	4,00		3,00	
	Core General Courses		2,00	1,00	1,00			
1	Safe Living Basics	C	1,00	1,00				PC-20, PC-8, PC-9, UC-1, UC-11, UC-3, UC-4, UC-6, UC-7, UC-8
2	Physical Training	C	1,00		1,00			UC-1, UC-7, UC-8
	Optional General Courses		12,00	6,00	3,00		3,00	
1	Legal Literacy	C	3,00		3,00			GPC-4.AMI, PC-14, PC-15, PC-20, PC-8, UC-1, UC-10, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
2	Russian History	C	4,00	4,00				GPC-1.SEN, GPC-4.AMI, PC-8, UC-1, UC-2, UC-4, UC-5, UC-6, UC-9
3	Foundations of Russian Statehood	C	2,00	2,00				UC-5
4	Philosophy	C	3,00				3,00	GPC-4.AMI, PC-14, PC-15, PC-20, PC-8, UC-1, UC-10, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8
	Minor		20,00		10,00	10,00		
1	Minor	C	20,00		10,00	10,00		GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-16, PC-17, PC-18, PC-19, PC-20, PC-5, PC-6, UC-1, UC-2, UC-3, UC-5, UC-8
	English		1,00				1,00	
	Examinations		1,00				1,00	
1	Independent English Exam (offered in a foreign language)	C						GPC-1.AMI, GPC-3.AMI, GPC-4.AMI, PC-12, PC-20, PC-8, UC-1, UC-4, UC-5, UC-8
2	Project Proposal (offered in a foreign language)	C	1,00				1,00	GPC-1.BUI, GPC-2.BUI, GPC-3.AMI, GPC-4.AMI, PC-12, PC-20, PC-7, PC-8, UC-1, UC-3, UC-4, UC-5
3	English Language Integrative Exam	C						GPC-1.AMI, GPC-3.AMI, GPC-4.AMI, PC-12, PC-20, PC-8, UC-1, UC-4, UC-5, UC-8
	Optional Courses							

1	English (offered in a foreign language)	O	14,00	8,00	6,00		GPC-1.AMI, GPC-3.AMI, GPC-4.AMI, PC-12, PC-20, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5
2	Academic English Writing (offered in a foreign language)	O	2,00			2,00	GPC-1.AMI, GPC-3.AMI, GPC-4.AMI, PC-12, PC-20, PC-8, UC-1, UC-2, UC-3, UC-4, UC-5
	Data Culture		4,00			4,00	
1	Independent Digital Literacy Test	C					GPC-3.AMI, GPC-4.AMI, PC-10, PC-14, PC-16, PC-2, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-5
2	Independent Programming Test. Advanced Level	C					GPC-3.AMI, GPC-4.AMI, PC-10, PC-14, PC-16, PC-2, PC-20, PC-5, PC-6, PC-8, UC-1, UC-2, UC-5
3	Independent Data Science Test. Advanced Level	C	1,00			1,00	GPC-2.SEN, GPC-3.SEN, GPC-4.AMI, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-11, PC-16, PC-17, PC-18, PC-19, PC-20, UC-1, UC-2
4	Machine Learning	C	3,00			3,00	GPC-1.AMI, GPC-3.AMI, GPC-4.AMI, PC-11, PC-2, PC-20, PC-3, PC-5, PC-8, UC-1, UC-2
	Final State Certification (FSC)		1,00			1,00	
	Thesis Work		1,00			1,00	
1	Presenting of Graduation Thesis	C	1,00			1,00	GPC-1.SEN, GPC-2.SEN, GPC-3.SEN, GPC-4.SEN, GPC-5.SEN, GPC-6.SEN, GPC-7.SEN, GPC-8.SEN, PC-1, PC-10, PC-11, PC-12, PC-13, PC-14, PC-15, PC-16, PC-17, PC-18, PC-19, PC-2, PC-20, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9, UC-1, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8

Curriculum agreed:

Academic Supervisor	ULITIN B.I.	05.05.2023
Dean	ASEEVA N.V.	05.05.2023
Deputy Director	FOMENKOV D.A.	09.05.2023
Head of Centre for Educational Model Design	LEPESHKIN I.A.	19.05.2023

* Subject type:

Compulsory course

C

Optional course

O