

National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 09.03.04 Software Engineering
Educational Programme "Software Engineering"

Faculty of Economics, Management and Business Informatics, HSE - Perm

APPROVED by
Vice Rector

ROSHCHIN Y.S.
16.04.2021

Years of Study: 2020/2021 - 2023/2024

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

Block Code	Course	Subject type	Credits	Credits by Years				Planned Educational Programme Development Results (competencies according to the educational standard)
				1	2	3	4	
	Degree Programme		240	60	60	60	60	
	Major		149	49	37	25	38	
	Core Professional Block (Major)		108	46	34	14	14	
	Subject Areas		108	46	34	14	14	
	Discrete Mathematics		8	8				
1	Discrete Mathematics	C	8	8				UC-1, GPC-1
	Algebra		8	8				
1	Algebra	C	8	8				UC-1, GPC-1
	Mathematical Analysis		8	8				
1	Calculus	C	8	8				UC-1, GPC-1
	Probability Theory and Mathematical Statistics		5		5			
1	Probability Theory and Mathematical Statistics	C	5		5			PC-4, UC-1, GPC-1
	Programming		15	15				
1	Computer Practice in Python Programming	C	5	5				PC-7, PC-10, GPC-2, GPC-7, GPC-6
	Introduction to Programming		10	10				PC-7, GPC-2, GPC-6, PC-10, UC-1, GPC-7
	Algorithms and Data Structures		8		8			
1	Algorithms and Data Structures	C	8		8			GPC-1, GPC-3
	Organization of Computations		8		8			
1	Computer System Architecture	C	4		4			GPC-2, GPC-7
2	Operating Systems	C	4		4			PC-9, GPC-7, GPC-2
	Software Engineering		8		8			
1	Software Design	C	8		8			PC-9, PC-8, GPC-8, PC-10, PC-6, GPC-6, GPC-1, GPC-7
	Software Architecture		10		5		5	

1	Software Systems Architecture Design	C	5				5	GPC-1, PC-11, GPC-8, GPC-2, GPC-6, PC-10, GPC-4, PC-7	
2	Databases	C	5			5		GPC-1, GPC-8, PC-4, PC-9, GPC-2, PC-6, GPC-3	
	Software Quality Assurance and Testing		5				5		
1	Software Quality Assurance and Testing	C	5				5	GPC-1, PC-7, PC-11, GPC-6, GPC-3, GPC-2, PC-4	
	Development and Analysis of Requirements		8	3			5		
1	Development and Analysis of Requirements	C	5				5	GPC-1, PC-4, PC-11, PC-3	
2	Practice in Basics of Technical Documentation Designing	C	3	3				GPC-4, UC-4, PC-5, GPC-2, PC-3	
	Software Project Management		17	4			4	9	
1	Software Project Management	C	6					6	GPC-2, UC-2, PC-1, PC-7, PC-2, PC-12
2	Group Dynamics and Communication in Software Engineering Professional Practice	C	4				4		UC-3, UC-4, UC-6, PC-12
3	Software Engineering Economics	C	3					3	UC-2, PC-7, GPC-4, GPC-1
4	Introduction into Software Engineering	C	4	4					PC-4, GPC-7, PC-12, UC-1, GPC-2, PC-5, UC-3, GPC-1
	Elective Professional Block (Major)		41	3	3		11	24	
	Дисциплины по выбору студента (4 курс)		21					21	
1	Intelligent Systems	E	7					7	GPC-1, PC-10, GPC-8, GPC-2
2	Neuron Networks	E	7					7	GPC-1, GPC-2, GPC-8, PC-10
3	Data Analysis Technologies in Internet	E	7					7	PC-10, GPC-1, GPC-2, GPC-8
4	Semantic Information Systems	E	7					7	GPC-1, GPC-2, GPC-8, PC-10
5	Web Programming	E	7					7	GPC-7, GPC-6, PC-9, PC-10, PC-7, GPC-5, PC-8
	Дисциплины по выбору студента (3 курс)		8					8	
1	Distributed Computing	E	4				4		PC-7, GPC-6, GPC-2, PC-8, GPC-7, PC-10, PC-9, GPC-5
2	Modern Programming Languages and Technologies	E	4				4		PC-8, GPC-2, PC-7, GPC-6, PC-9, GPC-5, GPC-7, PC-10
3	Computer Graphics	E	4				4		PC-10, GPC-7, GPC-2, PC-7, GPC-6
4	Mobile applications development	E	4				4		GPC-7, PC-7, PC-10, PC-9, GPC-6, GPC-2, GPC-5, PC-8
5	Integration, Processing and Visualization of Data	E	4				4		GPC-1, GPC-8, PC-4
	Научно-исследовательский семинар		6				3	3	
	НИС 3 курс		3				3		
1	Research Seminar - 1	E	3				3		GPC-3, GPC-1, GPC-7, UC-4, UC-6, PC-5, UC-1, UC-2
	НИС 4 курс		3					3	
1	Research Seminar - 2	E	3					3	GPC-7, UC-4, GPC-3, UC-1, GPC-1, PC-5, UC-2, UC-6
	Проектный семинар		6	3	3				
	Проектный семинар (1 курс)		3	3					

1	Project Seminar 1	E	3	3				UC-3, PC-5, PC-2, UC-2, GPC-2, GPC-4, GPC-5, PC-3, UC-6, GPC-1
	Проектный семинар (2 курс)		3		3			
1	Project Seminar 2	E	3		3			GPC-4, PC-2, GPC-5, UC-3, PC-5, PC-3, GPC-1, UC-6, GPC-2, UC-2
	Internship		43	5	8	12	18	
	Professional Internship		10		3	7		
1	Work Experience Internship	C	7			7		GPC-5, UC-6, GPC-6, PC-5, GPC-2
2	Educational Internship	C	3			3		UC-6, GPC-6, GPC-2, PC-5, GPC-5
	Project Internship		21	5	5	5	6	
1	Graduation Internship	E						UC-6, GPC-2, GPC-6, PC-5, GPC-5
2	Preparation of Graduation Thesis	E						GPC-8, PC-6, PC-7, PC-10, PC-2, PC-3, PC-9, PC-5, GPC-6, PC-8, UC-6, GPC-4, GPC-1, UC-4, GPC-5, UC-1, UC-2, GPC-3, PC-11, PC-12, GPC-2, GPC-7, PC-4, PC-1
3	Командный проект по программной инженерии	E	6				6	UC-6, PC-11, PC-10, PC-9, UC-3, GPC-5, PC-8, PC-3, GPC-6, PC-1, PC-2, GPC-2
4	Курсовой проект	E	15	5	5	5		GPC-2, GPC-6, PC-5, PC-8, PC-3, PC-10, GPC-5, PC-9, UC-6, PC-11, UC-3
	Research Internship		12				12	
1	Graduation Internship	C	6				6	GPC-5, GPC-6, PC-5, GPC-2, UC-6
2	Preparation of Graduation Thesis	C	6				6	GPC-5, GPC-8, PC-4, PC-7, PC-11, GPC-2, PC-1, UC-6, GPC-4, GPC-7, GPC-6, PC-5, PC-9, UC-4, PC-3, PC-10, PC-2, PC-6, UC-1, UC-2, GPC-1, GPC-3, PC-12, PC-8
	General Courses		14	6		8		
	Core General Courses		2	2				
1	Safe Living Basics	C	1	1				UC-8
2	Physical Training	C	1	1				UC-7
	Optional General Courses		12	4		8		
1	Introduction to Law	C	4			4		UC-2
2	Economics	C	4			4		UC-2
3	History	C	4	4				UC-5
	Minor		20		10	10		
1	Minor	E	20		10	10		UC-6, UC-1, UC-2
	English		1				1	
	Examinations		1				1	
1	Project Proposal	C	1				1	UC-4, PC-5
2	English Language Integrative Exam	C						UC-4
3	Independent English Language Test	C						UC-4
	Optional Courses							

1	Academic English Writing	O	2				2	UC-4
2	English	O	8	8				UC-4
3	English	O	6		6			UC-4
	Data Culture		10		5	5		
1	Mathematical Methods for Data Analysis	C	5		5			GPC-1, PC-4, UC-1
2	Machine Learning	C	5			5		GPC-1, PC-10, GPC-2, GPC-8
	Final State Certification (FSC)		3				3	
	Thesis Work		3				3	
1	Presenting of Graduation Thesis	C	3				3	GPC-3, PC-11, PC-5, PC-2, UC-5, PC-3, GPC-5, GPC-4, PC-6, PC-4, UC-4, UC-3, PC-12, PC-8, UC-8, GPC-6, PC-10, PC-9, GPC-2, UC-1, UC-2, UC-7, GPC-8, GPC-7, PC-1, PC-7, GPC-1, UC-6
	State Examinations							

Academic Supervisor VIKENTEVA O.L. 06.04.2021

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Head of Degree Programmes
Development Office MAMONOVA M.A. 14.04.2021

* Subject type:

Compulsory course C
Elective course E
Optional course O