



National Research University Higher School of Economics (HSE)

Curriculum

Field of study 09.03.04 Software Engineering

Educational Programme "Software Engineering"

Implementing unit: Faculty of Computer Science, HSE - Moscow

3 rd, 2023/2024 academic year

APPROVED

25.05.2023

Vice Rector

ROSHCHIN S.Y.

Signed with EDS

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 Programme			60,00	2 280	515	180	178	201	182	
	Data Culture			6,00	228	56	28	28		2	
1	Mathematical Methods for Data Analysis	C	Department of Big Data and Information Retrieval	5,00	190	56	28	28A			Online Course, Foreign language
2	Independent Data Science Test. Advanced Level	C	отдел развития цифровых компетенций	1,00	38	2				2A	Online Course
	Major			36,00	1 368	300	112	112	160	140	
	Core Professional Block (Major)			23,00	874	300	112	112	160	140	
	Subject Areas			23,00	874	300	112	112	160	140	
	Algorithms and Data Structures			4,00	152	60	28	28	32	28	
	Core Disciplines in Algorithms (Cohort 1)			4,00	152	60			32	28	
1	Machine Learning	E	Joint System Programming Department with Institute for System Programming of the Russian Academy of Sciences	4,00	152	60			32	28A	
	Core Disciplines in Algorithms (Cohort 2)			5,00	190	56	28	28			
1	Databases	E	Department of Software Engineering	5,00	190	56	28	28A			Online Course
	Software Quality Assurance and Testing			4,00	152	60			32	28	
1	Software Quality Assurance and Testing	C	Department of Software Engineering	4,00	152	60			32	28A	
	Software Architecture			5,00	190	60	28	28	32	28	
1	Compiler Technologies	E	Joint System Programming Department with Institute for System Programming of the Russian Academy of Sciences	5,00	190	56	28	28A			
2	Software Systems Architecture Design	E	Department of Software Engineering	5,00	190	60			32	28A	
	Development and Analysis of Requirements			5,00	190	60	28	28	32	28	

1	Databases (part 2)	E	Department of Software Engineering	5,00	190	56	28	28A			
2	Development and Analysis of Requirements	E	Department of Software Engineering	5,00	190	60			32	28A	Online Course
Software Project Management				5,00	190	60	28	28	32	28	
Elective Course				5,00	190	60	28	28	32	28	
1	Functional Programming	E	Joint System Programming Department with Institute for System Programming of the Russian Academy of Sciences	5,00	190	60			32	28A	
2	Software Engineering Economics	E	Department of Software Engineering	4,00	152	56	28	28A			
Elective Professional Block (Major)				13,00	494						
Elective courses 3rd year				10,00	380	116	28	28	32	28	
Electives Semester 1				5,00	190	56	28	28			
1	Program Verification	E	Joint System Programming Department with Institute for System Programming of the Russian Academy of Sciences	5,00	190	56	28	28A			
2	IOS Applications Development Basics	E	Department of Software Engineering	5,00	190	56	28	28A			
3	Applied Methods of Linear Algebra	E	Department of Mathematics	5,00	190	60	28	32A			
4	Design and Development of Smart Contracts for Blockchain Platforms	E	Department of Software Engineering	5,00	190	56	28	28A			
5	Fault-tolerant System Design	E	базовая кафедра Тинькофф	5,00	190	56	28	28A			
6	Game development in Unreal Engine	E	Department of Software Engineering	5,00	190	56	28	28A			
7	Spatial Data Management	E	Department of Software Engineering	5,00	190	56	28	28A			Foreign language
8	Functional and Logic Programming	E	Department of Software Engineering	5,00	190	56	28	28A			Foreign language
9	IoT Ecosystems	E	Department of Software Engineering	5,00	190	56	28	28A			Foreign language
Electives Semester 2				5,00	190	60			32	28	
1	Computer Networks	E	Department of Software Engineering	5,00	190	60			32	28A	Foreign language
2	Building Scoring Models Using Machine Learning Methods	E	Department of Software Engineering	5,00	190	60			32	28A	Foreign language
3	Design and Development of Decentralized Applications	E	Department of Software Engineering	5,00	190	60			32	28A	
4	Fault-tolerant System Design 2	E	базовая кафедра Тинькофф	5,00	190	80			40	40A	
5	Industrial iOS Development	E	Department of Software Engineering	5,00	190	60			32	28A	
6	Development of Intellectual Agents of Computer Games	E	Department of Software Engineering	5,00	190	60			32	28A	
7	Distributed Databases and Data Warehouses	E	Department of Software Engineering	5,00	190	60			32	28A	Foreign language

8	Distributed Computing	E	Department of Software Engineering	5,00	190	60			32	28A	Foreign language
9	Linguistic aspects in NLP context	E	School of Linguistics	5,00	190	60			32	28A	
	Research seminar			3,00	114	48	14	14	20		
	Research Seminar 3rd Year			3,00	114	48	14	14	20		
1	Research Seminar "Cloud Services of the Mir Payment System. Business Technology Service Design"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
2	Research Seminar "Introduction to Industrial Software Engineering"	E	базовая кафедра фирмы 1C	3,00	114	48	14	14	20A		
3	Research Seminar "Fuzzy Modeling"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
4	Research Seminar "Cloud Technology"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
5	Research Seminar "Practical Techniques for Improving Code Quality"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
6	Research Seminar "Development of Web Applications in JavaScript"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
7	Research Seminar "Development of Cross-Platform Cloud and Mobile Applications"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
8	Research Seminar "System Programming 1"	E	Joint System Programming Department with Institute for System Programming of the Russian Academy of Sciences	3,00	114	48	14	14	20A		
9	Research Seminar "Computer Vision Technologies"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
10	Research Seminar "Data and Knowledge Management"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
11	Research Seminar "Game Development Product Management"	E	Department of Software Engineering	3,00	114	48	14	14	20A		
	Minor			10,00	380	152	38	38	38	38	
1	Minor	E		10,00	380	152	38	38A	38	38A	
	English					3			3		
	Examinations					3			3		
1	Independent English Exam	C	School of Foreign Languages			3			3A		Foreign language
	Internship			8,00	304	4	2			2	
	Project Internship			5,00	190	2				2	
1	Term Project 2	C		5,00	190	2				2A	
	Professional Internship			3,00	114	2	2				
1	Work Experience Internship	C		3,00	114						
2	Technological Internship	C				2	2A				

Curriculum agreed:

Academic Supervisor	SHILOV V.V.	22.05.2023
Dean	ARZHANTSEV I.V.	22.05.2023
Head of Centre for Educational Model Design	LEPESHKIN I.A.	25.05.2023

* Subject type:

Compulsory course

C

Elective course

E

Optional course

O