National Research University Higher School of Economics (HSE)

Curriculum
Field of study 01.04.02 Applied Mathematics and Informatics
Educational Programme "Modern Computer Science"
Trajectories: "Data Science", "Theoretical Computer Science"
Implementing unit: Faculty of Computer Science, HSE - Moscow
1 st, 2023/2024 academic year

Length of Programme: 2 years
Years of Study: 2023/2024 - 2024/2025
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**	**514**	**120**	**152**	**104**	**138**	
	Data Science (General track)			**60,00**	**2 280**	**578**	**120**	**120**	**168**	**170**	
	Major			**45,00**	**1 710**	**544**	**112**	**112**	**160**	**160**	
	1 year 1 semester			**24,00**	**912**	**224**	**112**	**112**			
1	Algorithms in External Memory	E	Joint Department with Yandex	6,00	228	56	28	28A			
2	Algorithms and Data Structures 1	E	Joint Department with Yandex	6,00	228	56	28	28A			
3	Deep Vision and Graphics	E	Joint Department with Yandex	6,00	228	56	28	28A			
4	Computer Vision	E	Joint Department with Yandex	6,00	228	56	28	28A			
5	Natural Language Processing	E	Joint Department with Yandex	6,00	228	56	28	28A			
6	C++ Programming Language, Part 1	E	Joint Department with Yandex	6,00	228	56	28	28A			
7	Python	E	Joint Department with Yandex	6,00	228	56	28	28A			
	1 year 2 semester			**21,00**	**798**	**320**			**160**	**160**	
1	Algorithms and Data Structures 2	E	Joint Department with Yandex	6,00	228	80			40	40A	
2	Generative Models, Part 2	E	Department of Big Data and Information Retrieval	3,00	114	40				40A	
3	Reinforcement Learning	E	Joint Department with Yandex	6,00	228	80			40	40A	
4	Learning C++ 2	E	Joint Department with Yandex	6,00	228	80			40	40A	
5	Recommender Systems	E	Joint Department with Yandex	3,00	114	40				40A	
6	Speech Technologies	E	Joint Department with Yandex	6,00	228	80			40	40A	
7	Efficient Deep Learning Systems	E	Joint Department with Yandex	6,00	228	80			40	40A	
	Key Seminars			**6,00**	**228**	**32**	**8**	**8**	**8**	**8**	
1	Mentor's Seminar "Data Science"	C	Joint Department with Yandex	6,00	228	32	8	8	8	8A	
	Magolego			**6,00**	**228**						
1	All-university Pool MAGOLEGO Courses	E		6,00	228						
	Internship			**3,00**	**114**	**2**				**2**	

#	Course	Type	Department	Credits	Hours						
	Project Internship			**3,00**	**114**	**2**				**2**	
1	Project	C		3,00	114	2				2A	
	Theoretical Computer Science (General track)			**60,00**	**2 280**	**578**	**120**	**120**	**168**	**170**	
	Major			**45,00**	**1 710**	**544**	**112**	**112**	**160**	**160**	
	1 year 1 semester			**24,00**	**912**	**224**	**112**	**112**			
1	Algorithmic Game Theory	E	Department of Big Data and Information Retrieval	6,00	228	56	28	28A			
2	Algorithms and Data Structures 1	E	Joint Department with Yandex	6,00	228	56	28	28A			
3	Introduction to Applied Cryptography, Part 1	E	Joint Department with Yandex	6,00	228	56	28	28A			
4	Theory of Algorithms	E	Department of Big Data and Information Retrieval	6,00	228	56	28	28A			
5	Game Theory	E	Joint Department with Yandex	6,00	228	56	28	28A			
6	Information Theory	E	Joint Department with Yandex	6,00	228	56	28	28A			
7	Type Theory	E	Department of Big Data and Information Retrieval	6,00	228	56	28	28A			
	1 year 2 semester			**21,00**	**798**	**320**			**160**	**160**	
1	Algorithms and Data Structures 2	E	Joint Department with Yandex	6,00	228	80			40	40A	
2	Approximation Algorithms, Convex Programming	E	Department of Big Data and Information Retrieval	3,00	114	40			40A		
3	Introduction to Applied Cryptography, Part 2	E	Joint Department with Yandex	6,00	228	80			40	40A	
4	Combinatorial Constructions in Theoretical Computer Science	E	Department of Big Data and Information Retrieval	6,00	228	80			40	40A	
5	Lattice-Based Cryptography	E	Department of Big Data and Information Retrieval	3,00	114	40				40A	
6	Fundamentals of Matrix Computations	E	Department of Big Data and Information Retrieval	6,00	228	80			40	40A	
7	Industrial Programming in Haskell, Part 1	E	Department of Big Data and Information Retrieval	3,00	114	40			40A		
	Key Seminars			**6,00**	**228**	**32**	**8**	**8**	**8**	**8**	
1	Mentor's Seminar "Theoretical Informatics"	C	Department of Big Data and Information Retrieval	6,00	228	32	8	8	8	8A	
	Magolego			**6,00**	**228**						
1	All-university Pool MAGOLEGO Courses	E		6,00	228						
	Internship			**3,00**	**114**	**2**				**2**	
	Project Internship			**3,00**	**114**	**2**				**2**	
1	Project	C		3,00	114	2				2A	

Curriculum agreed:

Academic Supervisor	Khuzieva A.E.	26.05.2023
Dean	ARZHANTSEV I.V.	26.05.2023
Head of Centre for Educational Model Design	LEPESHKIN I.A.	26.05.2023

* Subject type:

Compulsory course	C
Elective course	E