National Research University Higher School of Economics (HSE)

Curriculum
Field of study 01.04.02 Applied Mathematics and Informatics
Educational Programme "Math of Machine Learning"
Trajectories: "Math of Machine Learning"
Implementing unit: Faculty of Computer Science, HSE - Moscow
1 st, 2024/2025 academic year

Length of Programme: 2 years
Years of Study: 2024/2025 - 2025/2026
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**	**566**	**94**	**176**	**168**	**128**	
	Math of Machine Learning (General track)			**60,00**	**2 280**	**566**	**94**	**176**	**168**	**128**	
	Major			**48,00**	**1 824**	**532**	**84**	**168**	**160**	**120**	
	Basic Components			**27,00**	**1 026**	**300**	**56**	**84**	**120**	**40**	
1	High Dimensional Probability and Statistics	C	Department of Big Data and Information Retrieval	6,00	228	80			40	40A	Foreign language
2	Computational Linear Algebra	C	Skolkovo Institute of Science and Technology	6,00	228	56	28	28A			Foreign language
3	Additional Topics in Probability Theory	C	Department of Big Data and Information Retrieval	3,00	114	28	28A				Foreign language
4	Markov Chains	C	Department of Big Data and Information Retrieval	6,00	228	68		28	40A		Foreign language
5	Machine Learning	C	Skolkovo Institute of Science and Technology	6,00	228	68		28	40A		Foreign language
	Elective Courses. 1 year			**21,00**	**798**	**232**	**28**	**84**	**40**	**80**	
1	Introduction to Data Analysis	E	Skolkovo Institute of Science and Technology	3,00	114	28	28A				Foreign language
2	Introduction to Computer Vision	E	Skolkovo Institute of Science and Technology	3,00	114	28		28A			Foreign language
3	Computational Imaging	E	Skolkovo Institute of Science and Technology	3,00	114	28	28A				Foreign language
4	Geometrical Methods of Machine Learning	E	Skolkovo Institute of Science and Technology	3,00	114	40				40A	Foreign language
5	Deep Learning	E	Skolkovo Institute of Science and Technology	6,00	228	80			40	40A	Foreign language
6	Perception in Robotics	E	Skolkovo Institute of Science and Technology	6,00	228	68		28	40A		Foreign language

#	Subject	Type*	Department	Credits	Hours						Language
7	Deep Learning for Natural Language Processing	E	Skolkovo Institute of Science and Technology	3,00	114	40				40A	Foreign language
8	Optimization in Machine Learning	E	Skolkovo Institute of Science and Technology	3,00	114	28		28A			Foreign language
9	Foundations of Software Engineering	E	Skolkovo Institute of Science and Technology	3,00	114	28	28A				Foreign language
10	Principles of Applied Statistics	E	Skolkovo Institute of Science and Technology	3,00	114	28		28A			Foreign language
11	Tensor Decompositions and Tensor Networks in Artificial Intelligence	E	Skolkovo Institute of Science and Technology	6,00	228	68			28	40A	Foreign language
Key Seminars				**6,00**	**228**	**32**	**8**	**8**	**8**	**8**	
1	Mentor's Seminar "Math of Machine Learning "	C	Department of Big Data and Information Retrieval	6,00	228	32	8	8	8	8A	Foreign language
Internship				**6,00**	**228**	**2**	**2**				
Project Internship				**6,00**	**228**	**2**	**2**				
1	Innovation Workshop	C		6,00	228	2	2A				Foreign language

Curriculum agreed:

Academic Supervisor	NAUMOV A.A.	28.02.2024
Dean	ARZHANTSEV I.V.	28.02.2024
Head of Centre for Educational Model Design	LEPESHKIN I.A.	10.04.2024

* Subject type:
Compulsory course   C
Elective course   E