Документ подписан простой электронной подписью
Информация о владельце:
ФИО: Ливанов Дмитрий Викторович
Должность: Ректор
Дата подписания: 14.08.2023 15:40:31
Уникальный программный ключ:
c6d909c49c1d2034fa3a9156cvera51e7232a3a2

Ministry of Science and Higher Education of the Russian Federation
The Federal State Autonomous Educational Institution of Higher Education
"Moscow Institute of Physics and Technology (National Research University)"

# A C A D E M I C  P L A N

Qualification Master

Year of enrollment 2023

Statutory duration of a study course 2 years

**APPROVED**
Vice Rector for Academic Affairs

A. A. Voronov

**Domain of study: 01.04.02 - Applied Mathematics and Informatics**
**Orientation (specialty): Modern State of Artificial Intelligence/Современные методы искусственного интеллекта**
**Phystech School of Applied Mathematics and Informatics**
**hair of Machine Learning and Digital Humanities**

**AGREED**
Head of the Phystech School of Applied Mathematics and Informatics

A. M. Raygorodskiy

| № in order | Name of disciplines, practices, State Final Examination | Form of final control by semesters: Examinations 1 | 2 | 3 | 4 | Graded test ("-" - simple) 1 | 2 | 3 | 4 | State Examination | Hours: Laboratory classes | Total classroom sessions | Lections | Laboratory classes | Practical lessons, seminars, exercises, etc. | Practice | Independent study | Hours for preparation and examinations | Coursework and test papers | hours in week, Distribution by courses and semesters: 1 course, 1 sem. 15 weeks lect. | lab. | sem | 2 sem. 15 weeks lect. | lab. | sem | 2 course, 3 sem. 15 weeks lect. | лб. | sem | 4 sem. 15 weeks lect. | lab. | sem | TOTAL HOURS | Credit points: Total | Basic | Elective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | | | | 4 | | | | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | 16 | | | 17 | | | 18 | | | 19 | 20 | 21 | 22 |
| M.1 | **Courses (Modules)/Дисциплины (модули)** | | | | | | | | | | **1 905** | **975** | **435** | | **540** | | **930** | **300** | **10** | | | | | | | | | | | | | 2 205 | 49 | 9 | 40 |
| M.1.1 | **Foreign Languages/Иностранные языки** | | | | | | | | | | **180** | **120** | | | **120** | | **60** | | **4** | | | | | | | | | | | | | 180 | 4 | 4 | |
| | | | | | | -1 | | | | | **90** | **60** | | | **60** | | **30** | | **2** | | | 4 | | | | | | | | | | 90 | 2 | 2 | |
| | | | | | | | 2 | | | | **90** | **60** | | | **60** | | **30** | | **2** | | | | | | 4 | | | | | | | 90 | 2 | 2 | |
| | **Humanitarian and Social Cycle/Гуманитарный и социальный цикл** | | | | | | | | | | **165** | **60** | **60** | | | | **105** | **60** | **4** | | | | | | | | | | | | | 225 | 5 | 5 | |
| M.1.2 | Global Trends and Methods for Strategic Development in the Era of Uncertainty/Глобальные тренды и методы стратегического развития в эпоху неопределенности | 1 | | | | | | | | | **60** | **30** | **30** | | | | **30** | **30** | **2** | 2 | | | | | | | | | | | | 90 | 2 | 2 | |
| M.1.3 | Digital Transformation: Social and Economic Challenges/Цифровая трансформация: социальные и экономические вызовы | | 2 | | | | | | | | **105** | **30** | **30** | | | | **75** | **30** | **2** | | | | 2 | | | | | | | | | 135 | 3 | 3 | |
| | **Core science/Профильные дисциплины** | | | | | | | | | | **1 515** | **780** | **375** | | **405** | | **735** | **240** | **2** | | | | | | | | | | | | | 1 755 | 39 | | 39 |
| M.1.B.1 | Algorithms and Computational Complexity/Алгоритмы и сложность вычислений | 1 | | | | | | | | | **105** | **60** | **30** | | **30** | | **45** | **30** | | 2 | | 2 | | | | | | | | | | 135 | 3 | | 3 |
| M.1.B.2 | Optimization Methods/Методы оптимизации | 1 | | | | | | | | | **105** | **60** | **30** | | **30** | | **45** | **30** | | 2 | | 2 | | | | | | | | | | 135 | 3 | | 3 |
| M.1.B.3 | Probability Theory and Applications/Теория вероятностей | 1 | | | | | | | | | **105** | **60** | **30** | | **30** | | **45** | **30** | | 2 | | 2 | | | | | | | | | | 135 | 3 | | 3 |
| M.1.B.4 | Software Development and Data Engineering/Разработка ПО и системы хранения данных | | | | | | | | | | **225** | **105** | **60** | | **45** | | **120** | | | | | | | | | | | | | | | 225 | 5 | | 5 |
| | | | | | | 1 | | | | | **90** | **45** | **30** | | **15** | | **45** | | | 2 | | 1 | | | | | | | | | | 90 | 2 | | 2 |
| | | | | | | | 2 | | | | **135** | **60** | **30** | | **30** | | **75** | | | | | | 2 | | 2 | | | | | | | 135 | 3 | | 3 |
| M.1.B.5 | Introduction to the Recommendation Systems/Введение в рекомендательные системы | | | | | | 2 | | | | **45** | **15** | | | **15** | | **30** | | | | | | | | 1 | | | | | | | 45 | 1 | | 1 |
| M.1.B.6 | Machine Learning with Graphs/Машинное обучение на графах | | | | | | 2 | | | | **90** | **45** | **15** | | **30** | | **45** | | **2** | | | | 1 | | 2 | | | | | | | 90 | 2 | | 2 |
| M.1.B.7 | Distributed and Cloud Computing/Распределенные и облачные вычисления | | | 3 | | | | | | | **105** | **60** | **30** | | **30** | | **45** | **30** | | | | | | | | 2 | | 2 | | | | 135 | 3 | | 3 |
| M.1.B.8 | Statistical Data Analysis/Математическая статистика и анализ данных | | 2 | | | | | | | | **105** | **60** | **30** | | **30** | | **45** | **30** | | | | | 2 | | 2 | | | | | | | 135 | 3 | | 3 |
| M.1.B.9 | Machine Learning/Машинное обучение | | | | | | 2 | | | | **90** | **45** | **15** | | **30** | | **45** | | | | | | 1 | | 2 | | | | | | | 90 | 2 | | 2 |
| M.1.B.10 | Computer Vision/Компьютерное зрение | | | 3 | | | | | | | **105** | **60** | **30** | | **30** | | **45** | **30** | | | | | | | | 2 | | 2 | | | | 135 | 3 | | 3 |
| M.1.B.11 | Reinforcement Learning/Обучение с подкреплением | | | 3 | | | | | | | **150** | **75** | **45** | | **30** | | **75** | **30** | | | | | | | | 3 | | 2 | | | | 180 | 4 | | 4 |

| № in order | Name of disciplines, practices, State Final Examination | Form of final control by semesters: Examinations 1 | 2 | 3 | 4 | Graded test ("-" - simple) 1 | 2 | 3 | 4 | State Examination | Hours: Laboratory classes | of them: Total classroom sessions | Lections | Laboratory classes | Practical lessons, seminars, exercises, etc. | Practice | Independent study | Hours for preparation and examinations | Coursework and test papers | hours in week: Distribution by courses and semesters: 1 course, 1 sem. 15 weeks lect. | lab. | sem | 1 course, 2 sem. 15 weeks lect. | lab. | sem | 2 course, 3 sem. 15 weeks lect. | лб. | sem | 2 course, 4 sem. 15 weeks lect. | lab. | sem | TOTAL HOURS | Credit points: Total | Basic | Elective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | | | | 4 | | | | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | 16 | | | 17 | | | 18 | | | 19 | 20 | 21 | 22 |
| M.1.B.12 | Natural Language Processing/Обработка естественного языка | | | 3 | | | | | | | **150** | **75** | **45** | | **30** | | **75** | **30** | | | | | | | | 3 | | 2 | | | | 180 | 4 | | 4 |
| | Strategic Management for Leadership in ML/Стратегический менеджмент | | | | | | | 3 | | | **135** | **60** | **15** | | **45** | | **75** | | | | | | | | | 1 | | 3 | | | | 135 | 3 | | 3 |
| M.1.B.13 | Scientific Workshop: Modern Topics in Applied Mathematics and Computer Science/Научный семинар: Современные проблемы прикладной математики и информатики | | | | | 1 | | | | | **45** | **15** | | | **15** | | **30** | | | | | 1 | | | | | | | | | | 45 | 1 | | 1 |
| M.2 | **Practice/Практика** | | | | | | | | | | **2 850** | | | | | **2 850** | | **30** | | | | | | | | | | | | | | 2 880 | 64 | 64 | |
| M.2.1 | **Industrial Practice/Производственные практики** | | | | | | | | | | **2 850** | | | | | **2 850** | | **30** | | | | | | | | | | | | | | 2 880 | 64 | 64 | |
| M.2.1.1 | Personal Research Project/Научно-исследовательская работа | | | | | | | | | | **2 850** | | | | | **2 850** | | **30** | | | | | | | | | | | | | | 2 880 | 64 | 64 | |
| | | | | | | | 2 | | | | **945** | | | | | **945** | | | | | | | | | | | | | | | | 945 | 21 | 21 | |
| | | | | 3 | | | | | | | **735** | | | | | **735** | | **30** | | | | | | | | | | | | | | 765 | 17 | 17 | |
| | | | | | | | | | 4 | | **1 170** | | | | | **1 170** | | | | | | | | | | | | | | | | 1 170 | 26 | 26 | |
| M.3 | **State Final Certification/Государственная итоговая аттестация** | | | | | | | | | | **285** | | | | | | **285** | **30** | | | | | | | | | | | | | | 315 | 7 | 7 | |
| M.3.1 | Performance of and Defence of Graduation Thesis/Выполнение и защита выпускной квалификационной работы | | | | 4 | | | | | 4 | **285** | | | | | | **285** | **30** | | | | | | | | | | | | | | 315 | 7 | 7 | |
| TOTAL: | | Number of examinations and pass/fail tests: Examinations | | | | Pass/Fail tests | | | | | Distribution of hours by type of lesson | | | | | | | | | Distribution of classroom hours per week by semester | | | | | | | | | | | | Total hours | Total number of credits | | |
| | Fixed (wtihout State Final Examination) | 4 | 2 | 5 | | 3 | 6 | 1 | 1 | Obl. | 5 040 | 975 | 435 | | 540 | 2 850 | 1 215 | 360 | 10 | 22 | | | 21 | | | 22 | | | | | | 5 400 | 120 | 80 | 40 |
| | Extracurriculars | | | | | | | | | ECs. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | State Final Examination | | | | 1 | | | | | | | | | | | | | | | Distribution of hours of contact work by years and semesters | | | | | | | | | | | | Total hours | | | |
| | | | | | | | | | | | | | | | | | | | | 741 | | | | | | 420 | | | | | | 1 161 | | | |
| | | | | | | | | | | | | | | | | | | | | 369 | | | 372 | | | 386 | | | 34 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | Distribution of credits by years and semesters | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 53 | | | | | | 67 | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 16 | | | 37 | | | 34 | | | 33 | | | | | | |

**И.о. начальника учебного управления** **T. F. Artemenko**