



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 10.03.01 Information Security
Educational Programme "Information Security"

Implementing unit: Tikhonov Moscow Institute of Electronics and Mathematics, HSE - Moscow

Years of Study: 2022/2023 - 2025/2026

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

APPROVED
14.04.2022
Vice Rector
ROSHCHIN S.Y.
Signed with EDS

| Block Code | Course | Subject type | Credits | Credits by Years | | | | Planned Educational Programme Development Results |
|------------|---|--------------|---------|------------------|-------|-------|-------|---|
| | | | | 1 | 2 | 3 | 4 | |
| | Degree Programme | | 240,00 | 60,00 | 60,00 | 60,00 | 60,00 | |
| | Major | | 166,00 | 55,00 | 40,00 | 32,00 | 39,00 | |
| | Core Professional Block (Major) | | 101,00 | 48,00 | 26,00 | 15,00 | 12,00 | |
| 1 | Information Theory | C | 6,00 | | 6,00 | | | GPC-3, GPC-8, UC-2 |
| 2 | Cryptographic Methods of Information Security | C | 6,00 | | 6,00 | | | GPC-1, GPC-3, PC-2, PC-3, UC-1, UC-2 |
| 3 | Probability Theory and Mathematical Statistics | C | 6,00 | | 6,00 | | | GPC-3, UC-7 |
| 4 | The Foundations of Cryptography and Steganography | C | 4,00 | 4,00 | | | | GPC-2, GPC-5, GPC-7, PC-1, PC-3, UC-1, UC-2 |
| 5 | Algebra and Geometry | C | 5,00 | 5,00 | | | | GPC-3, PC-2 |
| 6 | Physics | C | 11,00 | 7,00 | 4,00 | | | GPC-3, GPC-4, UC-1, UC-2 |
| 7 | Algorithmization and Programming | C | 12,00 | 12,00 | | | | GPC-2, GPC-3, GPC-7, GPC-9, PC-1, UC-1 |
| 8 | System Programming | C | 7,00 | | | 7,00 | | GPC-7, GPC-8, PC-2, UC-6 |
| 9 | Coding Theory | C | 6,00 | | | | 6,00 | GPC-12, GPC-2, GPC-3 |
| 10 | Algorithmization and Programming | C | | | | | | GPC-7, UC-6 |
| 11 | Digital Circuity and Computer Architecture | C | 8,00 | | | 8,00 | | GPC-11, GPC-14, GPC-15, GPC-16, GPC-17, GPC-3 |
| 12 | Organizational and Legal Support for Information Security | C | 6,00 | | | | 6,00 | GPC-1, GPC-2, GPC-6, UC-4 |
| 13 | Calculus | C | 16,00 | 12,00 | 4,00 | | | GPC-2, PC-4 |
| 14 | Discrete Mathematics | C | 4,00 | 4,00 | | | | GPC-14, GPC-3 |
| 15 | Computer Science | C | 4,00 | 4,00 | | | | GPC-7, UC-2 |
| | Elective Professional Block (Major) | | 65,00 | 7,00 | 14,00 | 17,00 | 27,00 | |
| | Научно-исследовательский и проектный семинар | | 10,00 | 2,00 | | 5,00 | 3,00 | |

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|----|--|---|-------|------|-------|-------|-------|---|
| 1 | Project Seminar 1 | C | 2,00 | 2,00 | | | | GPC-10, GPC-12, GPC-5, PC-1, PC-2, PC-3, PC-4, UC-3, UC-4 |
| 2 | Project Seminar | C | 8,00 | | | 5,00 | 3,00 | GPC-5, PC-1, PC-2, PC-3, PC-4, UC-3, UC-4 |
| | Дисциплины по выбору ОП | | 55,00 | 5,00 | 14,00 | 12,00 | 24,00 | |
| 1 | Systems and Networks of Information Transfer (offered in a foreign language) | C | 6,00 | | 6,00 | | | GPC-7, GPC-8, GPC-9, UC-2 |
| 2 | Development of Secure Applications | C | 8,00 | | 8,00 | | | GPC-1, GPC-3, GPC-5, PC-1, PC-3, UC-1 |
| 3 | Software and Hardware Information Protection | C | 6,00 | | | 6,00 | | GPC-1, GPC-11, GPC-2, GPC-8 |
| 4 | Digital Signal Processing | C | 6,00 | | | 6,00 | | GPC-11, GPC-12, GPC-16, GPC-17, GPC-3, GPC-4, UC-2 |
| 5 | Wireless Communication Systems Security | C | 5,00 | | | | 5,00 | GPC-5, GPC-6, GPC-7, GPC-8, GPC-9 |
| 6 | Operating Systems Security | C | 5,00 | | | | 5,00 | GPC-10, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, UC-1, UC-2 |
| 7 | Cryptographic Protocols | C | 6,00 | | | | 6,00 | GPC-10, GPC-11, GPC-7, GPC-9, UC-1, UC-2, UC-6 |
| 8 | Data Loss Prevention Systems | C | 4,00 | | | | 4,00 | GPC-10, GPC-12, GPC-15, GPC-5, GPC-6, GPC-9, PC-1, PC-3 |
| 9 | Technical Protection of Information | C | 4,00 | | | | 4,00 | GPC-10, GPC-12, GPC-15, GPC-5, GPC-6, GPC-9 |
| 10 | Administration of systems and networks | C | 5,00 | 5,00 | | | | GPC-2, GPC-3, PC-1, PC-2, PC-3, PC-4 |
| | Internship | | 32,00 | | 9,00 | 10,00 | 13,00 | |
| | Professional Internship | | 5,00 | | | 5,00 | | |
| 1 | Work Experience Internship | C | 5,00 | | | 5,00 | | GPC-1, GPC-10, GPC-11, GPC-12, GPC-14, GPC-15, GPC-16, GPC-17, PC-3, UC-1, UC-3, UC-6, UC-8 |
| | Project Internship | | 8,00 | | 3,00 | 5,00 | | |
| 1 | Research or Applied Project | C | 8,00 | | 3,00 | 5,00 | | GPC-2, GPC-3, GPC-7, PC-1, PC-2, PC-3, PC-4, UC-6 |
| | Research Internship | | 19,00 | | 6,00 | | 13,00 | |
| 1 | Graduation Internship | C | 5,00 | | | | 5,00 | GPC-3, GPC-4, GPC-5, GPC-9, PC-1, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6 |
| 2 | Preparation of Graduation Thesis | C | 8,00 | | | | 8,00 | GPC-1, GPC-10, GPC-11, GPC-12, GPC-13, GPC-14, GPC-15, GPC-16, GPC-17, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9 |
| 3 | Educational Science Research Internship | C | 6,00 | | 6,00 | | | GPC-3, GPC-4, GPC-5, GPC-9, PC-1, PC-2, PC-3, PC-4, UC-2, UC-3, UC-6 |
| | General Courses | | 14,00 | 5,00 | 1,00 | 8,00 | | |
| | Core General Courses | | 2,00 | 1,00 | 1,00 | | | |
| 1 | Safe Living Basics | C | 1,00 | 1,00 | | | | UC-3, UC-6, UC-7, UC-8 |

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|---|---|---|-------|------|-------|-------|------|---|
| 2 | Physical Training | C | 1,00 | | 1,00 | | | UC-3, UC-7 |
| | Optional General Courses | | 12,00 | 4,00 | | 8,00 | | |
| 1 | Elective General Courses | E | 4,00 | 4,00 | | | | GPC-13, GPC-6, UC-10, UC-11, UC-4, UC-5, UC-9 |
| 2 | Law | C | 4,00 | | | 4,00 | | UC-10, UC-11, UC-5, UC-6 |
| 3 | Economics | C | 4,00 | | | 4,00 | | UC-10, UC-6, UC-9 |
| | Minor | | 20,00 | | 10,00 | 10,00 | | |
| 1 | Minor | E | 20,00 | | 10,00 | 10,00 | | UC-3, UC-4, UC-5, UC-6 |
| | English | | 1,00 | | | | 1,00 | |
| | Examinations | | 1,00 | | | | 1,00 | |
| 1 | Independent English Exam (offered in a foreign language) | C | | | | | | UC-1, UC-4 |
| 2 | Project Proposal (offered in a foreign language) | C | 1,00 | | | | 1,00 | UC-1, UC-4 |
| 3 | English Language Integrative Exam (offered in a foreign language) | C | | | | | | UC-1, UC-4 |
| | Optional Courses | | | | | | | |
| 1 | Academic Writing (offered in a foreign language) | O | 2,00 | | | | 2,00 | UC-4 |
| 2 | English (offered in a foreign language) | O | 8,00 | 8,00 | | | | UC-3, UC-4, UC-5 |
| 3 | English (offered in a foreign language) | O | 6,00 | | 6,00 | | | UC-3, UC-4, UC-5 |
| | Data Culture | | 4,00 | | | | 4,00 | |
| 1 | External Examinations on Digital Skills. Entry-level | C | | | | | | GPC-2 |
| 2 | External Examinations on Digital Skills. Intermediate Level | C | | | | | | GPC-2 |
| 3 | External Examinations on Digital Skills. Final Level | C | | | | | | GPC-2 |
| 4 | Machine Learning | C | 3,00 | | | | 3,00 | GPC-1, GPC-14, GPC-3, GPC-7, PC-1, PC-2 |
| 5 | Independent Data Science Test. Advanced Level | C | 1,00 | | | | 1,00 | GPC-12, GPC-3, GPC-7, PC-2, PC-3, UC-6 |
| 6 | Independent Programming Test. Advanced Level | C | | | | | | GPC-7, PC-3, UC-6 |
| 7 | Independent Digital Literacy Test | C | | | | | | GPC-7, PC-3, UC-6 |
| | Final State Certification (FSC) | | 3,00 | | | | 3,00 | |
| | Thesis Work | | 3,00 | | | | 3,00 | |
| 1 | Presenting of Graduation Thesis | C | 3,00 | | | | 3,00 | GPC-1, GPC-10, GPC-11, GPC-12, GPC-13, GPC-14, GPC-15, GPC-16, GPC-17, GPC-2, GPC-3, GPC-4, GPC-5, GPC-6, GPC-7, GPC-8, GPC-9, PC-1, PC-2, PC-3, PC-4, UC-1, UC-10, UC-11, UC-2, UC-3, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9 |

Curriculum agreed:

Academic Supervisor

IVANOV F.I.

12.04.2022

Dean KROUK E.A. 12.04.2022

Head of Centre for Educational Model Design LEPESHKIN I.A. 14.04.2022

* Subject type:

Compulsory course C

Elective course E

Optional course O