



National Research University Higher School of Economics (HSE)

Basic Curriculum

Field of study 04.03.01 Chemistry
Educational Programme "Chemistry"

Implementing unit: Faculty of Chemistry, HSE - Moscow

APPROVED
10.05.2023
Vice Rector
ROSHCHIN S.Y.
Signed with EDS

Years of Study: 2023/2024 - 2026/2027

Length of Programme: 4 years

Mode of Study: Full Time

Degree: Bachelor's degree

| Block Code | Course | Subject type | Credits | Credits by Years | | | | Planned Educational Programme Development Results |
|------------|--|--------------|---------|------------------|-------|-------|-------|---|
| | | | | 1 | 2 | 3 | 4 | |
| | Degree Programme | | 240,00 | 60,00 | 61,00 | 60,00 | 60,00 | |
| | Major | | 145,00 | 41,00 | 32,00 | 39,00 | 33,00 | |
| | Core Professional Block (Major) | | 96,00 | 41,00 | 32,00 | 23,00 | | |
| 1 | Probability Theory and Mathematical Statistics | C | 4,00 | | 4,00 | | | GPC-4, UC-1 |
| 2 | Organic Chemistry | C | 17,00 | | 17,00 | | | GPC-1, GPC-2, PC-5, PC-9 |
| 3 | Biochemistry (offered in a foreign language) | C | 3,00 | | | 3,00 | | GPC-1, PC-5 |
| 4 | Analytical Chemistry | C | 7,00 | | | 7,00 | | GPC-1, PC-7 |
| 5 | Quantum Chemistry | C | 5,00 | | | 5,00 | | GPC-3, PC-3 |
| 6 | Physical Chemistry | C | 5,00 | | | 5,00 | | GPC-4, PC-6 |
| 7 | Crystallography and Diffraction Methods | C | 3,00 | | | 3,00 | | GPC-1, GPC-5, PC-1 |
| 8 | Linear Algebra and Geometry | C | 7,00 | 7,00 | | | | GPC-4, UC-1 |
| 9 | Theoretical Inorganic Chemistry and Chemistry of the Elements | C | 17,00 | 17,00 | | | | GPC-1, GPC-2, GPC-4, PC-4, PC-8, PC-9 |
| 10 | Essentials of Physical Chemistry | C | 4,00 | 4,00 | | | | GPC-4, PC-6 |
| 11 | Physics | C | 10,00 | 6,00 | 4,00 | | | GPC-4, UC-1 |
| 12 | Calculus | C | 14,00 | 7,00 | 7,00 | | | GPC-4, UC-1 |
| | Elective Professional Block (Major) | | 49,00 | | | 16,00 | 33,00 | |
| | Compulsory disciplines | | 22,00 | | | 7,00 | 15,00 | |
| 1 | Polymers | C | 5,00 | | | | 5,00 | GPC-2, PC-5, PC-8 |
| 2 | Chemical Technology | C | 4,00 | | | | 4,00 | GPC-2, PC-1, PC-2 |
| 3 | Chemistry of Transition Metals | C | 7,00 | | | 4,00 | 3,00 | PC-4, PC-5, PC-8 |
| 4 | Electrochemistry | C | 3,00 | | | 3,00 | | GPC-2, GPC-4, PC-2, PC-3, PC-6, PC-9 |
| 5 | Introduction to Combinatorics and Graphs (offered in a foreign language) | C | 3,00 | | | | 3,00 | GPC-1, PC-1 |
| | Elective Courses | | 27,00 | | | 9,00 | 18,00 | |

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|---|---|---|-------|-------|-------|-------|-------|--|
| 1 | Elective Disciplines | E | 27,00 | | | 9,00 | 18,00 | PC-1, PC-2, PC-3, PC-4, PC-5, PC-6, PC-7, PC-8, PC-9 |
| | Internship | | 33,00 | 5,00 | 7,00 | 4,00 | 17,00 | |
| | Professional Internship | | | | | | | |
| | Project Internship | | 15,00 | 3,00 | 4,00 | 4,00 | 4,00 | |
| 1 | Research Project | E | 15,00 | 3,00 | 4,00 | 4,00 | 4,00 | GPC-1, GPC-2, PC-9, UC-3 |
| | Research Internship | | 18,00 | 2,00 | 3,00 | | 13,00 | |
| 1 | Graduation Internship | C | 6,00 | | | | 6,00 | GPC-1, GPC-2, GPC-6, PC-2, PC-9 |
| 2 | Preparation of Graduation Thesis | C | 7,00 | | | | 7,00 | GPC-1, GPC-2, GPC-3, PC-1, PC-3, PC-9, UC-6 |
| 3 | Term Paper in Inorganic Chemistry | C | 2,00 | 2,00 | | | | GPC-1, GPC-2, GPC-6, PC-9 |
| 4 | Term Paper in Organic Chemistry | C | 3,00 | | 3,00 | | | GPC-1, GPC-2, GPC-6, PC-9 |
| | General Courses | | 17,00 | 4,00 | 8,00 | 3,00 | 3,00 | |
| | Core General Courses | | 2,00 | 2,00 | 1,00 | | | |
| 1 | Safe Living Basics | C | 1,00 | 1,00 | | | | UC-11, UC-3, UC-8 |
| 2 | Physical Training | C | 1,00 | 1,00 | | | | UC-7 |
| | Optional General Courses | | 15,00 | 2,00 | 7,00 | 3,00 | 3,00 | |
| 1 | Economics | C | 3,00 | | 3,00 | | | UC-2, UC-9 |
| 2 | Legal Literacy | C | 3,00 | | | 3,00 | | UC-10, UC-2 |
| 3 | Philosophy | C | 3,00 | | | | 3,00 | UC-1, UC-5 |
| 4 | Russian History | C | 4,00 | | 4,00 | | | UC-5 |
| 5 | Foundations of Russian Statehood | C | 2,00 | 2,00 | | | | UC-5 |
| | Minor | | 20,00 | | 10,00 | 10,00 | | |
| 1 | Minor | E | 20,00 | | 10,00 | 10,00 | | UC-1, UC-2, UC-6 |
| | English | | 1,00 | | | | 1,00 | |
| | Examinations | | 1,00 | | | | 1,00 | |
| 1 | Independent English Exam (offered in a foreign language) | C | | | | | | UC-4 |
| 2 | Project Proposal (offered in a foreign language) | C | 1,00 | | | | 1,00 | GPC-6, UC-4 |
| 3 | English Language Integrative Exam (offered in a foreign language) | C | | | | | | UC-4 |
| | Optional Courses | | | | | | | |
| 1 | English Language (offered in a foreign language) | O | 14,00 | 8,00 | 6,00 | | | UC-4, UC-5 |
| 2 | Academic Writing (offered in a foreign language) | O | 2,00 | | | | 2,00 | UC-4, UC-5 |
| | Data Culture | | 18,00 | 10,00 | 4,00 | 4,00 | | |
| 1 | Introduction into Python | C | 4,00 | | 4,00 | | | GPC-5, UC-1 |
| 2 | Data Analysis in Python | C | 3,00 | | | 3,00 | | GPC-5, UC-1 |
| 3 | Independent Programming Test. Intermediate | C | | | | | | GPC-5, UC-1 |
| 4 | Independent Data Science Test. Intermediate | C | 1,00 | | | 1,00 | | GPC-5, UC-1 |
| 5 | Information Technology in Chemistry | C | 4,00 | 4,00 | | | | GPC-3, GPC-5 |
| 6 | Chemical Information Search | C | 3,00 | 3,00 | | | | GPC-3, GPC-5 |
| 7 | Independent Digital Literacy Test | C | | | | | | GPC-5, UC-1 |
| 8 | Digital Literacy | C | 3,00 | 3,00 | | | | GPC-3, GPC-5 |

