

## National Research University Higher School of Economics (HSE)

Curriculum

Field of study 03.03.02 Physics

Educational Programme "Physics"

Specialization: "Condensed Matter Physics", "Low Temperature Physics", "Nanoelectronics and Photonics", "Quantum Optics and Nanophotonics", "Quantum Technologies", "Space Physics", "The Teaching of Modern Physics", "Theoretical Physics"

Faculty of Physics, HSE - Moscow

1 st, 2021/2022 academic year

APPROVED by  
Vice RectorROSHCHIN Y.S.  
07.07.2021

Length of Programme: 4 years

Years of Study: 2021/2022 - 2024/2025

Mode of Study: Full Time

Degree: Bachelor's degree

Number of Students: 65

Number of Groups: 4

| Block Code                             | Course  | Subject type | Department   | Credits   | Total Academic Hours | Contact Hours | Allocation of Contact Hours |            |            |            | Additional Information |
|--|---|--------------|--|-----------|----------------------|---------------|-----------------------------|------------|------------|------------|------------------------|
|  |   |              |  |           |                      |               | 1                           | 2          | 3          | 4          |                        |
| <b>Degree Programme</b>                |   |              |  | <b>60</b> | <b>2 584</b>         | <b>1 085</b>  | <b>254</b>                  | <b>230</b> | <b>314</b> | <b>287</b> |                        |
| <b>Data Culture</b>                    |   |              |  |           |                      | <b>3</b>      |                             |            |            | <b>3</b>   |                        |
| 1                                      | Independent Digital Competence Assessment. Digital Literacy | C            | центр поддержки и мониторинга образовательных программ |           |                      | 3             |                             |            |            | 3A         |                        |
| <b>Major</b>                           |   |              |  | <b>47</b> | <b>1 786</b>         | <b>740</b>    | <b>162</b>                  | <b>144</b> | <b>234</b> | <b>200</b> |                        |
| <b>Core Professional Block (Major)</b> |   |              |  | <b>47</b> | <b>1 786</b>         | <b>740</b>    | <b>162</b>                  | <b>144</b> | <b>234</b> | <b>200</b> |                        |
| <b>Subject Areas</b>                   |   |              |  | <b>47</b> | <b>1 786</b>         | <b>740</b>    | <b>162</b>                  | <b>144</b> | <b>234</b> | <b>200</b> |                        |
| <b>Computational Physics</b>           |   |              |  | <b>6</b>  | <b>228</b>           | <b>54</b>     | <b>32</b>                   |            | <b>22</b>  |            |                        |
| 1                                      | Computer Science  | C            | Faculty of Physics                                     | 3         | 114                  | 32            | 32A                         |            |            |            |                        |
| 2                                      | Introduction into Python                                    | C            | Faculty of Physics                                     | 3         | 114                  | 22            |                             |            | 22A        |            | Online Course          |
| <b>Mathematics</b>                     |   |              |  | <b>26</b> | <b>988</b>           | <b>428</b>    | <b>88</b>                   | <b>96</b>  | <b>124</b> | <b>120</b> |                        |
| 1                                      | Analytical Approximation Methods                            | C            | Faculty of Physics                                     | 4         | 152                  | 84            |                             |            | 44         | 40A        |                        |
| 2                                      | Differential Equations                                      | C            | Faculty of Mathematics                                 | 4         | 152                  | 80            |                             |            | 40         | 40A        |                        |
| 3                                      | Linear Algebra  | C            | Faculty of Mathematics                                 | 4         | 152                  | 60            | 28                          | 32A        |            |            |                        |
| 4                                      | Calculus  | C            | Faculty of Mathematics                                 | 10        | 380                  | 140           | 28                          | 32A        | 40         | 40A        |                        |
| 5                                      | Elements of Mathematical Methods of Physics                 | C            | Faculty of Physics                                     | 4         | 152                  | 64            | 32                          | 32A        |            |            |                        |
| <b>General Physics</b>                 |   |              |  | <b>10</b> | <b>380</b>           | <b>174</b>    | <b>42</b>                   | <b>48</b>  | <b>44</b>  | <b>40</b>  |                        |
| 1                                      | Mechanics   | C            | Faculty of Physics                                     | 5         | 190                  | 90            | 42                          | 48A        |            |            |                        |
| 2                                      | Electricity and Magnetism                                   | C            | Faculty of Physics                                     | 5         | 190                  | 84            |                             |            | 44         | 40A        |                        |
| <b>Theoretical Physics</b>             |   |              |  | <b>5</b>  | <b>190</b>           | <b>84</b>     |                             |            | <b>44</b>  | <b>40</b>  |                        |

|   |   |   |  |          |            |            |           |           |           |           |   |
|---|---|---|--|----------|------------|------------|-----------|-----------|-----------|-----------|---|
| 1 | Analytical Mechanics                    | C | Faculty of Physics                     | 5        | 190        | 84         |           |           | 44        | 40A       |   |
|   | <b>English</b>                          |   |  |          | <b>304</b> | <b>146</b> | <b>24</b> | <b>32</b> | <b>44</b> | <b>46</b> |   |
|   | <b>Optional Courses</b>                 |   |  |          | <b>304</b> | <b>144</b> | <b>24</b> | <b>32</b> | <b>44</b> | <b>44</b> |   |
| 1 | English                                 | O |  | 8        | 304        | 144        | 24        | 32A       | 44        | 44A       | Foreign language, Credits only to the cumulative rating |
|   | <b>Examinations</b>                     |   |  |          |            | <b>2</b>   |           |           |           | <b>2</b>  |   |
| 1 | English Language Integrative Exam       | C | School of Foreign Languages            |          |            | 2          |           |           |           | 2A        | Foreign language  |
|   | <b>General Courses</b>                  |   |  | <b>5</b> | <b>190</b> | <b>192</b> | <b>68</b> | <b>52</b> | <b>36</b> | <b>36</b> |   |
|   | <b>Optional General Courses</b>         |   |  | <b>4</b> | <b>152</b> | <b>30</b>  | <b>14</b> | <b>16</b> |           |           |   |
| 1 | History                                 | C | Department of Humanities               | 4        | 152        | 30         | 14        | 16A       |           |           | Online Course   |
|   | <b>Core General Courses</b>             |   |  | <b>1</b> | <b>38</b>  | <b>162</b> | <b>54</b> | <b>36</b> | <b>36</b> | <b>36</b> |   |
| 1 | Safe Living Basics                      | C | центр поддержки студенческих инициатив | 1        | 38         | 18         | 18A       |           |           |           | Online Course   |
| 2 | Physical Training                       | C | Department of Physical Training        |          |            | 144        | 36        | 36        | 36        | 36A       |   |
|   | <b>Internship</b>                       |   |  | <b>8</b> | <b>304</b> | <b>4</b>   |           | <b>2</b>  |           | <b>2</b>  |   |
|   | <b>Research Internship</b>              |   |  | <b>8</b> | <b>304</b> | <b>4</b>   |           | <b>2</b>  |           | <b>2</b>  |   |
| 1 | Практикум по механике                   | C |  | 4        | 152        | 2          |           | 2A        |           |           |   |
| 2 | Практикум по электричеству и магнетизму | C |  | 4        | 152        | 2          |           |           |           | 2A        |   |

Academic Supervisor

GLAZKOV V.N.

01.07.2021

Dean

TRUNIN M.R.

01.07.2021

Head of Degree Programmes  
Development Office

MAMONOVA M.A.

05.07.2021

\* Subject type:

Compulsory course

C

Elective course

E

Optional course

O