Bachelor Program: Technical physics

Institute: Physical-Technical Institute

Study Program: Physical optics and quantum electronics

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| **№** | **Subject** | **Semester** | **Hours** | **Credits** |
| 1 | History | 1 | 108 | 3 |
| 2 | Philosophy | 5 | 108 | 3 |
| 3 | Foreign language | 1-3 | 324 | 9 |
| 4 | Economics | 4 | 108 | 3 |
| 5 | Higher mathematics | 1-4 | 576 | 16 |
| 6 | Information technologies | 2 | 108 | 3 |
| 7 | Physics | 1-3 | 468 | 13 |
| 8 | Chemistry | 1 | 180 | 5 |
| 9 | Ecology | 6 | 72 | 2 |
| 10 | Engineering and computer graphics | 3,4 | 180 | 5 |
| 11 | Theoretical physics | 5-7 | 468 | 13 |
| 12 | Mathematical physics | 5,6 | 288 | 8 |
| 13 | Numerical methods of technical physics | 4 | 180 | 5 |
| 14 | Fundamentals of physical measurements | 1,2 | 144 | 4 |
| 15 | Electronics and circuit engineering | 3,4 | 324 | 9 |
| 16 | Metrology and physical-technical measurements | 5 | 108 | 3 |
| 17 | Occupational safety and health | 7 | 72 | 2 |
| 18 | Experimental techniques | 6 | 144 | 4 |
| 19 | Physical education | 1 | 72 | 2 |
| 20 | Legal state: history and modernity | 2 | 72 | 2 |
| 21 | Philosophy of science and technologies | 6 | 72 | 2 |
| 22 | Mechanics | 4 | 144 | 4 |
| 23 | Physical principles of material science | 5 | 144 | 4 |
| 24 | Training workshop on mathematics  | 1-4 | 324 | 9 |
| 25 | Training workshop on physics | 1-3 | 252 | 7 |
| 26 | Probability theory and mathematical statistics | 5 | 108 | 3 |
| 27 | Physics of condensed state | 5 | 72 | 2 |
| 28 | Coherent and non-linear optics | 6 | 252 | 7 |
| 29 | Fundamentals of optoelectronics | 7 | 108 | 3 |
| 30 | Quantum radiophysics | 7 | 108 | 3 |
| 31 | Special topics of optoelectronics and nanophotonics | 8 | 144 | 4 |
| 32 | Psychology | 3 | 108 | 3 |
| 33 | History of Russian culture | 1 | 72 | 2 |
| 34 | Fundamentals of modern optics and nanophotonics | 2 | 108 | 3 |
| 35 | Coherent and non-coherent processing of information | 7 | 108 | 3 |
| 36 | Detection and processing of optical signals | 7 | 108 | 3 |
| 37  | Introduction to computerization of physical experiment | 8 | 72 | 2 |
| 38 | Special problems of electrodynamics in the optical range | 8 | 72 | 2 |
| 39 | Physical basis of UHF electronics | 4 | 72 | 2 |
| 40  | Fundamentals of scattering media optics | 5 | 72 | 2 |
| 41 | Foreign language for professional communications | 4 | 72 | 2 |
| 42 | Physical optics | 5 | 108 | 3 |
| 43 | Fundamentals of micro- and nanosensorics | 6 | 144 | 4 |
| 44 | Lasers, optoelectronic, and fiber-optic devices for industrial and biomedical applications | 7 | 216 | 6 |
| 45 | Laser diagnostic techniques | 7 | 252 | 7 |
| 46 | Physics and techniques of optical measurements | 8 | 180 | 5 |
| 47 | Innovation technologies in laser physics and nanophotonics | 8 | 72 | 2 |
| 48 | 1-st educational practice | 2 | 108 | 3 |
| 49 | 2-nd educational practice | 4 | 108 | 3 |
| 50 | Industrial practice | 6 | 108 | 3 |
| 51 | Scientific practice | 8 | 108 | 3 |
| 52 | Diploma preparation practice | 8 | 108 | 3 |
| 53 | Diploma defense |  | 216 | 6 |
|  | **Total** |  | **8968** | **240** |