

**Division:** *Institute of Natural Sciences and Mathematics*

**Academic programme:** *03.03.01 Applied Mathematics and Physics*

**Programme length:** *4 years*

**Language of instruction:** *Russian*

**Programme level:** *Bachelor's degree*

**Programme description:** *It is implemented in cooperation with the Moscow Institute of Physics and Technology. Fundamental training in physics and mathematics. Practical skills in modern computer technologies. The first 3 academic years are devoted to theoretical training with practical work on educational experimental installations using computer simulation.*

*Starting from the 4th academic year, research work, which is part of the curriculum on the basis of the Institute of Electrophysics of the Ural Branch of the Russian Academy of Sciences and the Laboratory of Physical Research of South Ural State University under the guidance of scientists with an international reputation, is carried out. Opportunity to lay the foundation for a future career in science.*

*Opportunity to become a research physicist who can work in almost any field of science and technology, including chemistry, computer science, mathematics, biology, and easily switch from one activity to another.*

### **Main programme-specific classes**

- *Mechanics. Thermodynamics and Molecular Physics. Electricity and Magnetism. Optics. Microphysics. Macrophysics.*
- *Theoretical Mechanics. Field Theory. Quantum Mechanics. Statistical Physics.*
- *Mathematical Analysis. Linear Algebra and Analytic Geometry. Differential Equations. Theory of Functions of a Complex Variable. Computational Mathematics. Fundamentals of the Theory of Probability and Stochastic Processes. Group Theory. Equations of Mathematical Physics. Functional Analysis.*
- *Fundamentals of Digital Technologies. Digital Technologies in Scientific Research. Digital Technologies and Artificial Intelligence in Optics.*
- *Introduction to the Field of Study. Modern Problems of Physics. Modern Problems of Natural Science. Surface Physics. Optical and Spectral Research Methods. Optical Waveguides. Laser Physics. Polarization Optics. Liquid Crystals. Condensed State Physics. Wave Theory. Medical Physics. Physical Experiment Technique. Special Physics Workshop. Fundamentals of the Organization of Scientific Research.*
- *Foreign Language. Special English. Business Communications*

- *Programme manager (Full name, academic degree, position) Nataliia D. Kundikova, Doctor of Sciences (Physics and Mathematics), Professor*
- *Programme description The major is unique in its combined training in mathematics, physics, computer science, computer technology and English. Solving topical problems of modern physics, students learn how to use specialized software for scientific calculations and gain invaluable skills in working with the most modern experimental equipment.*

**Programme manager:** *Nataliia D. Kundikova, Doctor of Sciences (Physics and Mathematics), Professor*