

Master programs taught in English:
Moscow Institute of Physics and Technology

Entry Requirements

- Bachelor's Degree or equivalent;
- High academic results;
- Proof of English language knowledge equivalent to level B2 (TOEFL iBT, IELTS or equivalent).

Admission Tests: Examination and/or an Interview with a program coordinator (option via-Skype)

How to apply

List of documents required:

- Passport (scanned copy);
- Resume (including educational awards, results of academic competitions, scientific publications);
- Statement of purpose;
- 2 letters of recommendation;
- Certificate of language proficiency (IELTS, TOEFL) (scanned copy).

*All documents should be submitted in English or Russian language

Application deadlines: Early admissions deadline: January 31, 2017

Reply deadline for early admissions students: March 01, 2017

Regular admissions deadline: May 31, 2017

Reply deadline for regular admissions students: July 01, 2017

<p>Physics of nanostructures Programme provides students with knowledge of edge fundamental and applied results in quantum nanophysics and light-matter interactions at nanoscale. A set of programme disciplines includes both fundamental and applied nanophysics oriented courses revealing basic physical principles underlying nanoscale phenomena, as well as describing particular applications of these principles in nanoelectronic and nanooptic devices. https://mipt.ru/english/edu/master/nanostructur</p>	<p>SPECIFIC PROGRAMS REQUIREMENTS</p> <ul style="list-style-type: none"> • Bachelor degree in Physics or related bachelor degree. • A proof of good knowledge in fundamentals of physics including mechanics, thermodynamics, electrodynamics, optics, quantum phenomena; and mathematics including linear algebra, calculus and differential equations, and knowledge of a high-level programming language. 	<p>General courses:</p> <ul style="list-style-type: none"> • Selected Topics in Theoretical and Mathematical Physics • Experimental Physics • Solid State Physics • Physics of Lasers <p>Courses on Physics of Nanostructures:</p> <ul style="list-style-type: none"> • Integrated Nanophotonics • Metamaterials and Plasmonics • Optics of Nanostructures and Nanomaterials • Superconducting Quantum Nanosystems • Computational Nanophysics • Quantum Phenomena in Nanosystems • Semiconductor Nanoelectronic Devices • Quantum Information Science and Technology
<p>Advanced combinatorics The programme is focused on modern aspects of combinatorics (discrete mathematics) and its applications in computer science and in the theory of complex networks. https://mipt.ru/english/edu/master/combinatorics</p>		<p>“Introductory” courses with emphasis on combinatorial viewpoint:</p> <ul style="list-style-type: none"> • Combinatorics; • Graph Theory; • Probability; • Calculus and algebra; <p>Common methods:</p> <ul style="list-style-type: none"> • Discrete Analysis; • Extremal combinatorics; <p>Specialized topics:</p> <ul style="list-style-type: none"> • Random graphs; • Advanced graph theory; • Combinatorial geometry; • Additive combinatorics; <p>Courses with applied flavour:</p> <ul style="list-style-type: none"> • Game theory; • Discrete Optimization; • Computational complexity; • Complex networks.

Neural network & neural computers

The programme is designed to orient the students with the domain of computation science, neural network and their implementation in modern computer architectures with the application in the area of:

- Information Security;
- Image Processing (2D and 3D);
- Signal Processing (voice, radar, etc.);
- Data Processing (text and other);
- Control systems;
- Modern computing hardware: GPU, FPGA, neurochips

<https://mipt.ru/english/edu/master/neural>

STUDIED COURSES:

- Basics of theory of probability and statistics;
- Neural network theory basics;
- Basics of neuromathematics;
- Professional tasks solutions based on Matlab and CUDA toolboxes;
- Fundamentals of Intelligent Cyber Security Management
- Intelligent technology for information security;
- Intelligent Learning Systems;
- Neuromathematics
- Image processing & Text processing;
- Computational intelligence;
- Neural Network Technology;
- Fuzzy Logic Technology
- Intelligent technology for information security;
- Neurocontrol;
- Neural Network Technology;
- Neurocomputers;
- Neurochips;
- Memristor based neural networks;
- Neuro-fuzzy technology in Intrusion Detection Systems on information resources;
- 3D images processing;
- Neural network based Intrusion detection system.

<p>Aerodynamics Master degree programme of the Department of Aeromechanics and Flight Engineering. This programme prepares students for professional positions in the aerospace industry, government, and business; it focuses on aeromechanics, control, propulsion and engineering problems of aircraft.</p> <p>https://mipt.ru/english/edu/master/aerodynamics</p>		<p>STUDIED COURSES:</p> <ul style="list-style-type: none"> • Essentials of fluid mechanics; • Aerodynamics of high-speed flows; • Dynamics of viscous gas; • Analytical methods in aeromechanics; • Modern methods of theoretical fluid mechanics; • The basics and applications of computational fluid dynamics; • Computational aerodynamics; • The numerical methods of aerodynamics for multidisciplinary optimization and design; • Typical CFD problems; • Gas dynamics of combustion; • Unsteady aeromechanics; • Physical foundation of the industrial wind tunnels tests; • Aviation ecology; • Aeroacoustics of aircraft; • Turbulence (optional); • Boundary-value problems of CFD (optional).
<p>Beam-plasma systems & technologies The programme is targeted at fundamental and applied researches in plasma physics and plasma chemistry associated with advanced technologies; it is based on the system approach to the beam-plasma systems and to their life-cycle support.</p> <p>https://mipt.ru/english/edu/master/beam-plasma</p>		<p>STUDIED COURSES:</p> <ul style="list-style-type: none"> • Electron kinetics; • Plasma physics; • Plasma chemistry; • Plasma medicine; • Chemistry of high energies for inorganic, organic and bio-organic matters; • Plasma technical systems; • System analysis and simulation of Beam-Plasma Systems; • Industrial Beam-Plasma technologies; • Aerospace Beam-Plasma technologies; • Elective discipline.

<p><i>Environmental & planetary sciences</i> The programme is aimed at preparing students for professional carrier in planetary science, space engineering, and remote sensing instrument development.</p> <p>https://mipt.ru/english/edu/master/planetaryscience</p>		<p>STUDIED COURSES:</p> <ul style="list-style-type: none"> • Introduction to the physics of planets; • Orbital dynamics of planetary systems; • Planetary geology; • Planetary interiors Physics and chemistry of impacts; • Dynamics of planetary atmospheres; • Photochemistry and spectroscopy of planetary atmospheres; • Radiative transfer in planetary atmospheres; • Planetary climate; • Instruments and methods of planetary missions; • Planetary astronomy; • Inverse problems in planetary studies.
<p><i>Energy technologies & environmental safety</i> The Master's program is aimed at training professionals in the field of modern safety technologies of nuclear energy and industry, the ecological impact of objects of nuclear energy and industry on the environment and the population, the economic efficiency of the nuclear industry development in view of environmental and safety.</p> <p>https://mipt.ru/english/edu/master/energy-technologies</p>		<p>STUDIED COURSES:</p> <ul style="list-style-type: none"> • The physics of fast gasdynamic processes; • Hydrodynamics of multiphase flows; • Computational Methods in Solid Mechanics; • Physical fundamentals of radiobiology; • Basics of Radiation Biology; • Physical and mathematical models and software systems in radiation ecology; • Methods of disposal of radioactive waste and spent nuclear fuel; • Economy of Energy safety; • Statistics of extremum and the Risks theory.

<p>Atmosphere & ocean fluid dynamics</p> <p>This program is focused on modern aspects of the atmosphere and ocean fluid dynamics of the open ocean rather than on the near-coastal and shoreline regions. A special place in the course devoted to the study of oceanography of arctic regions. That makes this program simultaneously both pure and applied.</p> <p>https://mipt.ru/english/edu/master/Atmosphere-ocean</p>		<p>STUDIED COURSES:</p> <p>“Introductory” courses:</p> <ul style="list-style-type: none"> • Mathematical Analysis • Differential Equations • Partial Differential Equation • An introduction in continuum mechanics <p>“Geophysical fluid dynamics” courses:</p> <ul style="list-style-type: none"> • Geophysical fluid dynamics • Simulation in geophysical fluid dynamics • Modern geophysical methods in ocean studying • Computational geophysical fluid dynamics <p>“Atmospheric and oceanic fluid dynamics” courses:</p> <ul style="list-style-type: none"> • An introduction in physical oceanography • Ocean ecology • Ocean and atmosphere interaction • Regional Oceanography • Operational Oceanography <p>“Arctic region oceanography” courses:</p> <ul style="list-style-type: none"> • Oceanography of Arctic • Mechanics of ice
<p>Omics technologies</p> <p>The Master of Science (MSc) programme in Omics incorporates significant interdisciplinary content with a substantial contribution from Biochemistry/Molecular Biology, analytical biochemistry and computer science/IT.</p> <p>https://mipt.ru/english/edu/master/omics</p>		<p>STUDIED COURSES:</p> <ul style="list-style-type: none"> • Proteomics; • Metabolomics; • Transcriptomics; • Genomics (prokaryotes and eukaryotes); • Bioinformatics; • Gene and cell technologies.