Master programs taught in English:
National University of Science and Technology MISiS

General Information	Courses	Graduates' areas of activity
Innovative software systems: design, development &applications This two-year master's program in English devoted to research in the field of innovative software systems. The program offers a systematic training in the design, development and application of innovative software systems in various spheres of human activity. Such software can interact with various objects, structures, tools, etc. used in human economic activity, and in any area — from financial, social institutions and to the field of mechanical engineering, electronics and others. http://en.misis.ru/academics/masters-english/innovative-software-systems/	• Modern Methods of Structural Characterization of Micro- and Nano-Systems • Formulation of Requirements and Scope Definition for Innovative Information Systems • Object-Oriented Analysis and Development. Pattern Development • Technology and Materials of Quantum Electronics • Computer-Aided Design of Software Systems • Databases and Data Warehouses • Tensor Method of Complex Systems Network Models • Management of Quality • Operating Environment Innovative Software Systems • Artificial Neural Networks • Web-Services and Saas-Services Design and Development	After the master degree, students will be able to apply their skills in research, production sphere, in the sphere of management, etc. Graduates are in demand in various industries: banking, engineering production, research laboratories, medical centers, IT companies in the sector, and others.
Communications and International Public Relations In this master's degree program, university professors teach interactive classes, heads of communications agencies share first-hand experience, and students benefit from multicultural discussions and challenging project work. It takes two years of full-time studies to complete this program. The first semester starts in September. In addition to required and elective courses, students interact with PR professionals, attend master classes, and visit various organizations. The final semester is dedicated to skills enhancement through an internship and synthesis of knowledge in a master's thesis. The ultimate goal of the program is to train highly qualified public relations and communications professionals who will successfully interact with business, government, and nonprofit organizations. Our alumni may work in PR or R&D departments of industrial enterprises, universities, or research institutes as well as in communications agencies. They will be ideal candidates	• Theories of Intercultural Communication • Communication Theory • Corporate Communication • Communication Management • Intercultural Business Communication • International Relations • Text Theory • Strategic Marketing • Research and Efficiency Evaluation in Public Relations • Public Relations Methodology in Industry • Quantitative Linguistics • Designing PR Projects • International Law	

for positions of communication consultants and PR specialists. http://en.misis.ru/academics/masters-english/communications/		
Nanotechnology and materials for micro- and nanosystems This two-year Master's degree program is taught in English and is devoted to the study of micro- and nano-scale phenomena, materials and devices. It gives students solid foundation in three core areas: nanomaterial fabrication and characterization; physical properties; and devices. The students will also understand the potential for the technology commercialization and its social impact. http://en.misis.ru/academics/masters-english/nanotechnology/	• Embedded Systems and Software Engineering • Metal-carbon Nanocomposites • Methods of Mathematical Modeling • Micro and Nano Sensors • Simulation Methods • Spintronics Materials and Devices • Technology and Materials of Quantum Electronics • Synthesis of Nanomaterials and Heterostructures	
Science and Materials of Solar Energy Current global energy demands require clean and efficient approach. The two-year masters program in Science and Materials of Solar Energy at National University of Science and Technology "MISiS" is designed to prepare future engineers who will implement sustainable energy solutions. The program is a balance between theoretical knowledge and practical skills in the field of Renewable Energy. The students will learn pros and cons of conventional and renewable energy sources. International professors and scholars will share their knowledge and experience about conventional and innovative methods, materials and systems used for harvesting the energy of our Sun. http://en.misis.ru/academics/masters-english/solar-energy/	• Fundamentals of Photovoltaics • Photovoltaic materials • Solar Energy Systems Design and Construction • Solar Cell Technology Fundamentals • Nano-sacle Photovoltaics • Technology of Solar Panel Manufacturing	
Quantum physics for advanced materials engineering This two-year English-medium Master's program is devoted to the study of macroscopic quantum phenomena discovered in nano-structured materials and quantum devices created during the last 20-30 years in the search for components for quantum electronics. At the same time the program addresses the basic physic principles of correlated electron	Departmental courses: • Modern Quantum Physics of Solids • Electron Theory of Metals • Technologies and Materials of Quantum Electronics • Spectroscopic Methods for Analysis of Materials Interdepartmental courses: • Foreign Language	

systems and devices of quantum electronics, as well as some important manufacturing techniques and measurements of physical and chemical characteristics of quantum-sized structures and materials. http://en.misis.ru/academics/masters-english/quantum-physics/	• Project Management • Economics of Innovation • Management of Quality • Intellectual Properties Rights Protection	
Advanced metallic materials and engineering This two-year Master's program taught in English provides rigorous training for high-quality researchers and inventors of new materials and technologies, who specialize in the field of mechanical engineering, aerospace industry, non-ferrous physical metallurgy. Wide application of modern educational equipment and techniques (training simulators, special software etc.) will be used during education. http://en.misis.ru/academics/masters-english/advanced-engineering/	• Modelling and Optimization in Physical Metallurgy • Development of Metallic Materials • Thermodynamic Computation and Analysis of Phase Diagrams of Multicomponent Systems • Metallic Materials: Structure, Properties and Application • Modern Equipment and Techniques for Investigation of Structure and Properties of Metallic Alloys • Diffusion in Solids • Advanced Technologies of the Metallic Materials Production • Thermal and Thermo-Mechanical Treatment of Special Steels and Alloys • Metal Matrix Composites • Corrosion and Protection of the Metallic Materials • Development of Metallic Materials (Part 2) • Thermodynamics and Kinetics in Materials Science	
Inorganic nanomaterials This two-year Master's program taught in English is devoted to science and technology of advanced inorganic nanomaterials. The master's course students will start with the studies in the science of engineering materials, which is a broad, multidisciplinary field devoted to understanding and control over the mechanical, electrical, optical and magnetic properties of a variety of functional nanomaterials (metals, ceramics, and composites). They will then continue to learn more advanced inorganic materials, individual nanostructures (nanoparticles, nanotubes, and nanosheets), associated composite materials and nanostructured coatings as well as hard and superhard nanomaterials. The master's program students will receive comprehensive knowledge and gain practical skills in the field of atomistic simulations of solids and nanostructures, mechanical and optical	• Science of Engineering Materials • Combustion Synthesis of Inorganic Materials • Atomistic Simulations of Solids and Nanostructures • Fabrication of Inorganic Nanomaterials • Intellectual Properties Rights Protection • Surface Engineering • Hard and Superhard Nanomaterials • Environmental Degradation and Protection • Anelasticity and Mechanical Spectroscopy of Materials • Spectroscopy of Nanostructures • Advanced Electron Microscopy for Material Science: From New Materials to Nanostructures	

spectroscopy, as well as fabrication and advanced characterization of inorganic nanomaterials.		
Multicomponent nanostructed coatings. Nanofilms The present educational program is devoted to the advanced methods of surface modification and coating deposition, with particular emphasis on nanostructured and nanocomposite films and coatings. Master's program students receive fundamental knowledge and practical skills in the field of materials (and surface) characterization using diverse advanced analytical methods such as X-ray Diffraction, Scanning and Transmission Electron Microscopy, Atomic Force Microscopy, X-rayPhotoelectron Spectroscopy, Glow-Discharge Optical Emission Spectroscopy, Raman-shift, and IR spectroscopy. Graduate students will also gain practical skills in the use of modern equipment for testing thin films and coatings, including Nanohardness Testers, Tribometers, and Scratch Testers, and become familiar with presently existing standards. http://en.misis.ru/academics/masters-english/coatings-nanofilms/	• Advanced Methods of Coatings and Nanofilms Deposition • Disperse-Strengthened by Nanoparticles Tribological Coatings • SHS Process as a Basis of Synthesis of Inorganic Materials • Nanofilms: Fundamental Principles, Characterization, Testing, and Application • Methods of Contact and Non-Contact Characterization of Surface Topography • New Methods for Studying Mechanical Properties and Standards • Nanofilms for Mechanical Engineering and Medicine • Friction and Wear of Coatings	
Digital fabrication This two-year Master's program taught in English provides project based training with lots of hands on activities with modern digital fabrication techniques and technologies, including CAD (solid modeling, NURBS modeling, generative design etc.), materials processing with mechanical (CNC) and laser treatments, 3D printing, programming of embedded electronics and more. Advanced course on modern materials selection, and basic courses on project management and quality assurance are included into the program. http://en.misis.ru/academics/masters-english/digital-fabrication/	• Foreign Language (English / Russian) • Computer-aided design and engineering • Introduction to digital fabrication • Introduction to industrial design • Material selection • Digital fabrication practice • Management of Quality • Project Management • Industrial ecology	