



NATIONAL RESEARCH MOSCOW STATE  
**UNIVERSITY  
OF CIVIL  
ENGINEERING**



# **MASTER PROGRAMMES**

catalogue  
2019



I am very happy to greet you at National Research Moscow State University of Civil Engineering, leading university in the sphere of civil engineering education. Today, there are more than 20 thousand students studying in MGSU (NRU) and 1300 research and teaching staff, PhD, DSc and academics working here. Our mission is to prepare top grade professionals for investment and construction complex who are capable in solving tasks for social development of worldwide society, innovative scientific and educational activities, creating safe, energy-efficient and comfortable living environment. If you'd like to tie your life with civil engineering, looking for vocational improvement, or simply interested in studying in Russia, I invite you to the National Research Moscow State University of Civil Engineering.

MGSU (NRU) actively collaborates with 95 foreign universities from 33 countries. Deep knowledge of domestic, as well as foreign building practices and technologies, alongside with particulars of intercultural interaction, favorably allocates bearer of those qualities on the labor market. That's why, within its walls, MGSU (NRU) fosters atmosphere for multicultural interaction, promoting generation of unique ideas and innovative approaches. We strive to make our university attractive for foreign students. Here for you: comfortable dormitory, broad support from students and university staff, our professors always happy to spare some time and introduce you closer to the discipline.

University glad to offer you wide range of bachelor, specialist, master and PhD programs, developed with participation of leading professionals in the sphere of construction science and industry. Our National Research University trains professionals in wide range of subject areas from architecture and construction to economics and municipal management.

I give you my word, there won't be a day you'll regret about the time spent in MGSU (NRU). We hope, that you can use all our possibilities by their full potential and, in future, exalt the name National Research Moscow State University of Civil Engineering around the world.

Welcome to the National Research Moscow State University of Civil Engineering!

Rector of MGSU (NRU)



Andrey Volkov

National Research Moscow State University of Civil Engineering is the leading university of Russian Federation in the field of the construction which was established in 1921.

MGSU (NRU) carries out training of highly qualified engineers, specialists and managers of all levels in the field of industrial, civil, energy, construction, water management, special and unique construction, economy, planning and management of construction production, information systems and technologies, designing and automation of buildings, constructions and complexes.

MGSU (NRU) has modern research laboratory complexes, providing studies in different priority directions of development of science and technology. University enjoys deserved international respect, has a large experience of fruitful international cooperation with 95 universities and scientific-and-edu-

cational centers of 33 countries of the world.

The mission of the MGSU (NRU) is to create a system of leading personnel and academic support of the process of high qualitative modernization of investment and building complex for successful solution of priority state tasks of the high-tech and social development of the Russian Federation on the basis of the forming an innovative scientific and educational basis for the training of modern builders and architects, creating a safe, power efficient and comfortable environment, integration principles of sectoral science, professional education and information resources, effective usage of modern mechanisms of state-private partnership for the realization of the intellectual potential of profile scientific and educational institutions, creation of science-consuming products of the world level, transfer of technology and creativity in the most important spheres of human activities - building and architecture.



# ADMISSION PROCEDURE for foreign citizens.

To apply for admission to National Research Moscow State University of Civil Engineering (NRU MGSU) a foreign citizen has to prepare and submit to the University the following documents:

1. The completed Application form for foreign students;
2. The notarized copy of the educational document, legalized in the country of issue, including a copy of the page with the legalization mark - THE LEGALIZATION MARK IS NOT REQUIRED FOR THOSE, WHO APPLY FOR THE RUSSIAN LANGUAGE PROGRAM or WHOSE EDUCATIONAL DOCUMENTS ARE ISSUED IN RUSSIA;
3. The Russian translation of the educational document, certified by translator;
4. The copy of the first page of foreign passport;
5. The copy of previously obtained Russian visa;
6. The Russian translation of the first page of foreign passport, certified by translator - THOSE WHO HAVE A COPY OF THE PREVIOUSLY OBTAINED RUSSIAN VISA ARE NOT REQUIRED TO SUBMIT IT;
7. The copy of the payment document confirming transfer of the application fee to NRU MGSU - HAS TO BE PAID IN RUBLES TO THE UNIVERSITY BANK ACCOUNT.

NOTE: Foreign citizens who apply for Bachelor's degree, Master's degree or PhD program must legalize their educational documents if they are issued in a foreign country, not in Russia. The legalization mark can be obtained only in a country of issue of educational documents. To consult on legalization of educational documents, please, contact staff of the office #201A of the International Education Center of NRU MGSU (phone number: +7 (499) 929.50.12).

The mentioned above documents have to be either e-mailed at [inter@mgsu.ru](mailto:inter@mgsu.ru) or submitted by a foreigner representative to the office #201A International Education Center of NRU MGSU.

## Application deadline:

July (for fall semester); November (for spring semester).

Classes start: fall semester - on September Bachelor's and Master's, on October Russian language programs; spring semester - February.

Periods of arrival and registration at NRU MGSU: fall semester - from August till September (Bachelor's, Master's and Russian language programs) ; spring semester - from January till February.

UPON ARRIVAL AT THE UNIVERSITY a foreign applicant must submit the following documents:

1. The original educational document of the Russian national standard or an original educational document with the awarded degree and an official transcript to it issued in a foreign country (the transcript should include: list of studied subjects, total amount of class hours, credits, number of study weeks, received final grades, explanation for grading system, list of practical trainings, course papers and final qualification theses):
  - the document of full secondary general education or secondary professional education - FOR THOSE APPLYING FOR BACHELOR or SPECIALIST DEGREE PROGRAM (from the first year of study);

- the document of full secondary general education or secondary professional education, as well as academic transcript on unfinished higher education or diploma on the finished four-year education without awarding the Bachelor degree - FOR THOSE APPLYING FOR BACHELOR or SPECIALIST DEGREE PROGRAM (from the second or third year of study);
- Bachelor or Specialist degree diploma - FOR THOSE APPLYING FOR MASTER DEGREE PROGRAM;
- Master or Specialist degree diploma - FOR THOSE APPLYING FOR PhD PROGRAM.

2. The notarized copy of the educational document and the official transcript to it, legalized in the country of issue, including a copy of the page with the legalization mark - THE LEGALIZATION MARK IS NOT REQUIRED FOR THOSE, WHO APPLY FOR THE RUSSIAN LANGUAGE PROGRAM or WHOSE EDUCATIONAL DOCUMENTS ARE ISSUED IN RUSSIA;

3. The Russian translation of the educational document and the official transcript to it, certified by translator;

4. the Certificate of successful completion of the pre-university training course or the pre-university department - NOT REQUIRED FOR THOSE WHO APPLY FOR THE PRE-UNIVERSITY LANGUAGE PROGRAM;

5. The copy of payment document confirming the transfer of the tuition fee for the academic year or for one semester - HAS TO BE PAID IN RUBLES TO THE UNIVERSITY BANK ACCOUNT;

6. The copy of the first page of foreign passport;

7. The copy of previously obtained Russian visa;

8. Medical certificate, certifying absence of medical contraindications for studying (including the results of blood test for Anti-HIV (AIDS) and Syphilis (VDRL); results of Chest X-Ray test), with Russian translation, certified by a translator of the Russian Consulate in home country or a certified translator in the Russian Federation;

9. Copy of health and life insurance valid in Moscow region;

10. 4 color photos sized 3x4 cm.

ENROLLMENT TO THE UNIVERSITY is carried out on basis of documents presented by a student (the list of documents, please, see above), successfully passed entrance exams (not required for those applying for the Russian language program and for 2nd, 3rd, 4th years of study of Bachelor or Specialist degree programs), signed study contract and paid tuition fee.

To consult on admission procedure for foreign citizens, please, contact the staff of the International Education Center of NRU MGSU.

Address: 26, Yaroslavskoe avenue, office 201A, Moscow, Russian Federation

T: +7 (499) 929.50.12

E: [inter@mgsu.ru](mailto:inter@mgsu.ru)

Working hours:

Monday through Friday from 9:00 a.m. till 13:00 p.m., from 2:00 p.m. till 18:00 p.m., Friday - till 4:30 p.m.

07.04.01

# Architecture

Master's Program of the Institute of Construction and Architecture

## «Architecture»

*Training Program headed by:*

*Tkachev Valentin Nikitovich, Professor, Doctor of Architecture*



### About Program:

Architecture is a creative and engineering area of activity, combining material and spiritual culture, art and the most modern tools of science, engineering and technologies of construction. It is one of the rare opportunities to be a creator not by the title but at bottom, forming a new reality around you in such way to make it reliable, safely, endurable and at the same time esthetically perfect. This unique feature defines a sole professional and social responsibility of the architect, makes the process of its preparation at the university unique at all points: from necessary areas and multimedia 3D-studies to practices in the best capital architectural bureaus and international academic mobility. Upon completion of education you will become a qualified head, who is focused on creating of integral artificial material-spatial environment for comfortable human and social activities. Received knowledge will open the path to a successful career, rising of social status and future development

### Master's Theses Themes:

- Formation of local architectural and urban planning structures.
- Location of shopping and entertainment centers.
- Architecture of sports facilities' multifunctional area.
- Modern facade systems in the architecture of public buildings.
- Architectural and design principles of the spatial structure optimization of the large exhibition centers.
- Development of evidence-based recommendations for improving the architectural-and-planning solutions of various objects.
- Research of opportunities for allocation residential facilities in the former industrial areas.
- Energy efficiency of indoor sports facilities.
- Solving the problem of buildings accessibility for disabled people.
- Eco-sustainable energy-efficient design.

**Graduates are employed in the** leading institutions, major building organizations, architectural, landscape and engineering bureaus, technical and industrial design companies, regional and municipal public authorities on the profile positions.

### Graduate structural subdivisions:

Department of Architecture  
Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK),  
classrooms №506, 507  
T: +7 (495) 287.49.14 ext. 3100, 3112  
E: pz@mgsu.ru, balakinae@mgsu.ru



07.04.04

# Urban Planning

Master's Program of the Institute of Construction and Architecture

## «Urban Planning»

*Training Program headed by:*

*Alekseev Yuriy Vladimirovich, Doctor of Architecture*



### About Program:

Urban planning in modern conditions is a major professional activity on planning and spatial organization of the territory, which is forming the strategic vectors, principles and mechanisms of sustainable development and prospective territorial planning. A lot depends on urban planning specialist: how the city will be developed, what prospects can be opened for it, what kind of investments will be able to attract this or that territory and how the investments will be used in the future. You will learn how to use the most advanced approaches and tools for implementing an urban planning policy at the level of master planning, design and functional zoning, transport and engineering infrastructure for creation of comfortable and safe conditions in different scale, city-forming principles and location of the cities, settlements and metropolises. You will acquire the skills of analytical, regulatory-and-methodological, science-and-research activities, will plunge into the urban planning theory, will learn to find proper solutions of urban planning objectives in conditions of modern and heterogeneous built-up environment. You will get the skills of urban planning analysis and modeling of risks of the territory development will master the multimedia technologies of urban planning design.



### Master's Theses Themes:

- Modernization of residential built-up environment with multifamily residential houses.
- Territorial development and formation of parking in the residential built-up environment.
- Use of underground buildings and structures as objects of territorial-and-construction resource.
- Use of the overground territories in the buildings and urban planning formations.
- Formation of multifamily residential houses and complexes in the built-up environment of the residential territories.
- Organization of the system improvement and landscaping in the residential and public built-up environment on the artificial and natural foundation.
- Condition of aeration of residential built-up environment during the new construction and reconstruction.
- Placement of facilities of contemporary cultural and household services.
- Organization of street and road network and transport services.
- Formation of the transfer hubs systems.

**Graduates are employed in the** leading institutions and building organizations, architectural bureaus, regional and municipal public authorities, responsible for the general landscape planning, development of the territories, land administration and cadaster.

### Graduate structural subdivisions:

Department of Urban Planning

Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK),  
classrooms №512, 513

T: +7 (495) 287.49.14 ext. 3100, 3112

E: grado@mgsu.ru, danilinanv@mgsu.ru

Educational, research and production lab for aerodynamic and aeroacoustic testing of engineering structures

Address: 26 Yaroslavskoe shosse,  
Housing and Utility Complex

E: unpl@mgsu.ru

08.04.01

# Civil Engineering

DESIGN AND CONSTRUCTION

Complex of programs  
of the Institute of Construction and Architecture

Master's Program

## «Industrial and Civil Construction»

*Training Program in full-time education headed by:  
Tamrazyan Ashot Georgievich, Professor,  
Doctor of Engineering, Head of the Reinforced Concrete  
and Masonry Structures Department, Member of the  
Russian Engineering Academy, Adviser of the Russian  
Academy of Architecture and Construction Sciences*

*Training Program in extramural education headed by:  
Kabantsev Oleg Vasilyevich, Doctor of Engineering,  
Honorary Builder of Russia*



### About Program:

Construction is an engine of any economy at all times. Work in this branch requires complex and specialized profound knowledge. The modern world dictates new rules of using available area for construction, so this training program differs by large-scale diversification of knowledge and skills. Our graduates are responsible for the entire life cycle of modern industrial and civil buildings at the stages: from the urban planning and investment concepts, design, construction, efficient operation, repair and reconstruction, to demolition and disposal. Concurrently this engineering and creative profession requires flexible unconventional approach but at the same time elaborated and reasonable decisions for building the residential and non-residential objects. High-quality architectural forms, innovative materials, advanced technologies were not leave you indifferent, while received knowledge will guarantee you a dynamic career growth, whose limit depends only on you.

### Master's Theses Themes:

- Creation and improvement of rational types of the filler structures of buildings aimed at increase their bearing capacity and performance qualities.
- Physical and technical fundamentals of the industrial and civil buildings design.
- Modern trends of the space-planning and design solutions relating to residential, public and industrial buildings and structures.
- Functional-and-efficient arrangement of internal environment the buildings and structures.
- Reconstruction of buildings and facilities.
- Exploration of underground areas in the complex hydrological conditions.
- Energy efficiency of the buildings and facilities, «Passive houses».

- Thermal and physical issues of design of the filler structures.
- Research of the translucent constructions of the facades and coatings.
- Designing of natural acoustics in lounge and noise protection in buildings and structures.
- Designing of noise protection in conditions of built-up environment.
- Issues of design of natural illumination and insolation.
- Research of the spatial characteristics of light environment.
- Research of a strength-stress state of the reinforced concrete structures with steel reinforcement and reinforcement of composite materials using in normal and special conditions.
- Research of a strength-stress state of the bearing and filler masonry and reinforced masonry structures.
- Research of a strength-stress state of the reinforced concrete and masonry structures with defects and damage in exploited buildings and facilities.
- Development of methods for assessing the effect of defects and damages in reinforced concrete and masonry structures on their work during the stage of exploitation..
- Calculation of high-rise buildings taking into account nonlinear deformation.
- Analysis of strength-stress state of the uncut slabs.
- Modeling of the behavior of a high-rise building during the seismic influence using a MSCNastran software package.
- Modeling of the behavior of a multispan structure during the dynamic influence using MSCNastran and Lira software package.
- Improvement of methods for the defectoscopy of metallic and reinforced concrete building structures.
- The current state and development of methods for control over the strength-stress state of the structures.
- Development of a design of the system of automated monitoring over the technical condition of a high-rise structure.



- Research of durability of the bearing armatures of especially critical buildings and facilities
- Development and research of the new structural forms of metal structures.
- Resolving the problem of metal structures crevice corrosion and riveted products restoration
- Research of technical state of the actual work of bearing metal structures of buildings and facilities with the development of technical conclusions.
- Development and research of the new structural forms of metal constructions.

**Graduates are employed in the** design, construction and operating organizations, development companies, at the factories of the construction industry, at construction bureaus, federal, regional and municipal public authorities, responsible for the organization and planning of the construction.

**Graduate structural subdivisions:**

Reinforced Concrete and Masonry Structures Department  
 Address: 26 Yaroslavskoe shosse, Educational Laboratory Building (ULK), classrooms № 417, 418  
 T: +7 (495) 287.49.14 ext. 3036, 3084  
 E: gbk@mgsu.ru, tamrazyanag@mgsu.ru

Industrial and Civil Buildings Architecture Department  
 Address: 26 Yaroslavskoe shosse, Educational Laboratory Building (ULK), classrooms № 508, 509  
 T: +7 (495) 287.49.14 ext. 3059, 3089, 3097  
 E: agpz@mgsu.ru, stratiypv@mgsu.ru

Structural and Theoretical Mechanics Department  
 Address: 26 Yaroslavskoe shosse, Educational Laboratory Building (ULK), classroom № 405  
 T: +7 (495) 287.49.14 ext. 3074, 3141, 3142  
 E: stroitmeh@mgsu.ru, mondrusvl@mgsu.ru

Department of Metal and Timber Structures Address: 26 Yaroslavskoe shosse, Educational Laboratory Building (ULK), classrooms № 501, 502, 406, 408  
 T: +7 (495) 287.49.14 ext. 3111, 3110, 3053, 3061  
 E: linkov\_vi@mgsu.ru

Science and Education Center for Structure Testing  
 Address: 26 Yaroslavskoe shosse, First Year Courses Building (KMK), classroom № 382  
 T: +7 (495) 287.49.14 ext. 1388, 1331  
 E: uskunin@mgsu.ru, ermakov@mgsu.ru

Department of Integrated Safety in Civil Engineering  
 Address: 26 Yaroslavskoe shosse, Educational Laboratory Building (ULK), classrooms № 107, 207  
 T: +7 (495) 287.49.14 ext. 3064, 3066, 3068  
 E: techreg@mgsu.ru, korolchenkoda@mgsu.ru



## DESIGN AND CONSTRUCTION

Complex of programs of the Institute of Construction and Architecture

Master's Program

# «Material Science in Civil Engineering»

Training Program headed by:

*Bazhenov Yuriy Mikhailovich, Professor, Doctor of Engineering,  
Member of the Russian Academy of Architecture and Construction Sciences,  
Honored Scientist of the Russian Federation,  
Head of the Technologies of Cohesive Materials and Concretes Department*



### About Program:

On example of major historic buildings, as the Pyramids, Maya towns, temples and cathedrals of medieval period we can note how important the choice of materials for providing success and sustainability of the objects.

Material science in Civil Engineering is a fundamental basis which allows to operate with all variety of modern domestic and foreign construction materials, products and structures and also to create new ones. Under the auspices of our professors and lecturers you will operate a methodology of setting and carrying out science-and-research work, constructing a mathematical model of the processes when developing new modern materials, learning modern methods of scientific research and its application in the work process. An experience in conducting research relating to construction material science at macro-, micro- and nano-levels will make you a sought-after specialist at the labor market in construction sector.



### Master's Theses Themes:

- Elaboration and development of the self-compacting cement composites.
- Fiber concretes, reinforced with composite fiber.
- Testing and longevity evaluation of armored concrete construction along with exposure of corrosion environment and load.
- Microorganism influence on concrete and methods of biological corrosion prevention.
- Alkaline corrosion in concrete and methods of prevention.
- Behavior of high strength and high functional concretes after elevated and high temperatures.
- Design and use of cement composites for repairing and strengthening of historical masonry.
- Development of the increasing ways of nonmetallic composite fitting's elastic modulus.
- New energy-saving technologies of the reinforced concrete goods producing.
- Composite binders for concrete and reinforced concrete products.
- Research of buildings materials efficiency.
- Self-healing of reinforced concrete construction.
- Research of additives effect on structure and properties of cement brick.
- Investigation of heavy concrete freeze resistance.
- Self-compacting concrete for transport infrastructure.
- Compensation for shrinkage strain of hardening concrete.
- Methods for improving waterproof of gypsum binders.
- Production technologies elaboration of composite materials.
- Physical and mechanical characteristics explorations of nonmetallic armature.
- Structure and characteristic modification of building composites on the base of gypsum and anhydrite binders.
- Production technology elaboration of effective, low-power gypsum binders, materials and products.
- Concretes on geopolymer binders.
- Adapted super plasticizers in modern technology of concretes.
- Photocatalytic concretes for the reduction of the pollution level in urban environment of the metropolises.
- Soil concretes technology and characteristic.
- Research of structuring processes during the soil-cement systems solidification in different temperature-humidity conditions.
- Investigation of gypsum binder's artificial ageing.

- Investigation of the polymer composite armature's resistance during the influence of alkaline and acid conditions.
- Elaboration of the modified binder for getting high quality concretes.
- Research of physic and mechanic characteristics of building materials on the base of polymer wastes.
- Effective compositions for concrete floors.
- Damp-proof coating material with wollastonite.
- Effective structures for repair and recovery of constructions by shotcrete.
- Effective masonry mortar for low-rise building.
- Cement concrete on the base of wastes of asbestos-cement industry.
- Modify hydrophobized concrete.
- Reduced-weight concrete characteristic for restoration works.
- Effective fiber reinforced high-strength light concretes.
- Low cement high-strength light concretes for building construction.
- Nano-modified fire protective composites.
- Nano-modified foam- gypsum concretes with increased indicators of the operating ability.
- Bioresistant gypsum dry building mixture for indoor finish.
- Bioresistant nano-modified composite binders.
- Increasing of the serviceability of SFTK.
- Efficiency increasing of the polymer plaster.

**Graduates are employed in the** design, construction and operating organizations, development companies, at the factories of the construction industry and at construction bureaus, federal, regional and municipal public authorities, responsible for the organization and planning of the territories.

**Graduate structural subdivisions:**

Technologies of Binder Materials and Concretes Department  
 Address: 26 Yaroslavskoe shosse, Educational Laboratory Building (ULK), classroom № 522  
 T: +7 (495) 287.49.14 ext. 3101  
 E: tvvib@mgsu.ru

Department of Building Materials  
 Address: 26 Yaroslavskoe shosse, First Year Courses Building (KMK), classroom № 129, 135  
 T: +7 (499) 183.32.29, +7 (495) 287.49.14 ext. 1175  
 E: semenovvs@mgsu.ru

Scientific and Research Institute for Building Materials and Technologies  
 Address: 26 Yaroslavskoe shosse, First Year Courses Building (KMK), classrooms № 101-110  
 T: +7 (495) 656.14.66



DESIGN AND CONSTRUCTION  
Complex of programs  
of the Institute of Construction and Architecture

Master's Program

## «Technologies and Organization of Construction»

Training Program headed by:

*Oleynik Pavel Pavlovich, Professor, Doctor of Engineering,  
Honored Builder of Russian Federation, State Prize Laureate,  
Honorary Worker of Science and Technic of the Ministry of Education*



### About Program:

Building the house with the availability of all affordable technologies ceased to be a simple task of collecting the items according to the architect plan. The newest construction technologies allows bring to life the most brave and original concepts. Modern buildings, constructions and their complexes differ due to the diversity of extensive-planning and constructive decisions, applying of wide ranged materials of nomenclature, constructions and facilities. For their construction requires effective system decisions in the field of construction organization and manufacture of construction-and-assembling works. The program is comprehensive, so you will get a fundamental knowledge in the field of innovative methods, forms and ways of objects construction. In conditions of the specialist's acute shortage in this area the competences guarantee perfect job placement and provide career growth in producing, organizational and managing activity.

### Master's Theses Themes:

- Industrial and innovative technologies of civil and industrial buildings' reconstruction.
- Organizational and technical solutions during the profiling of buildings.
- Demolition and dismantling of the first industrial generation buildings.
- Perfection of the city customers' functions during the erection of the municipal habitation.
- Strategy of building company development.
- Modeling of the spatial, temporary and resource parameters of objects' erection.
- Principles and characterization of mobile construction system.
- Methods of objects' erection in hard-to-reach and little-developed areas.
- Preparing and organization of pioneer territory development.
- Innovative methods of objects' construction.
- Formation and exploitation of temporary construction camps.
- Improvement of production work technological processes.

- Peculiarities of production work in object reconstruction conditions.
- Selection and estimation of organizational and technological solutions.
- Engineering site mobilization stage.
- Activity of technical authority in the market conditions.
- Activities' system of the state construction supervision.
- Reserve for increasing the production efficiency of construction works.
- Operational administration of construction and erection works.
- Organization of quality control of construction and installation works.
- Formation and selection of engineering and technical solutions in the construction master plan.
- Formation and selection of engineering and technical solutions during the demolition (dismantling).
- Formation and selection of engineering and technical solutions during work production plan.
- Material and technical equipment support.
- Production and technological complement.
- Modern systems of fire fighting in buildings with special storage requirements.

**Graduates are employed in the** scientific, design, construction and operating organizations, development companies, at the factories of the construction industry and at customer and developer services, at construction bureaus, federal, regional and municipal public authorities, responsible for the organization and planning of the territories.

### Graduate structural subdivisions:

Department of Technologies  
and Organizations of Construction Production  
Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK),  
classrooms № 415, 416  
T: +7 (495) 287.49.14 ext. 3136, 3125  
E: lapidusaa@mgsu.ru

Department of Integrated Safety in Civil Engineering  
Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK),  
classrooms № 107, 207  
T: +7 (495) 287.49.14 ext. 3064, 3066, 3068  
E: techreg@mgsu.ru, korolchenkoda@mgsu.ru

GEO- AND HYDROTECHNICAL CONSTRUCTION  
Complex of programs  
of the Institute of Hydraulic Engineering and Power Plant Construction

Master's Program

## «Hydrotechnical Engineering»

Training Program headed by:  
Aniskin Nikolay Alekseevich, Doctor of Engineering, Professor



### About Program:

Russia is rich in water resources, but how to use this wealth in an efficient way without harm to the environment? Hydraulic engineering opens the ways for development, protection and practical exploitation of water objects. The specialists of this branch have the skills and abilities which make them valuable resources not only for native but for foreign companies, and providing future career growth. You will get expert qualification in the field of design, organization and coordination operation of hydraulic construction, exploitation, reconstruction and repair of hydro-technical utilities of various purposes: water-pressure, culvert, hydroeconomic, hydraulic power, water transport, environment-protection and groundwater. Considerable attention in the program is paid to the methods of numeric and physical modeling of the hydraulic structures and water facilities work, also to the learning of the principles of design and analysis of the river, sea and underground hydraulic structures.

### Master's Theses Themes:

- Strength-stress condition and stability of concrete dams taking into account the non-linear nature of interacting with a bedrock.
- Stability and strength of arch dams.
- Reliability of soil dams with non-ground antifiltration elements.
- Strength-stress state of underground hydraulic structures.
- Use of new materials in the structural design of hydraulic structures of various purpose.
- Filtration regime and pore pressure in the soil dams and foundations.
- Hydraulic structures seismic resistance.
- Hydraulic modeling of hydraulic structures and culverts.
- Wave loads on hydraulic structures.
- Structural and technological measures aimed at reinforcing and reconstructing hydraulic structures.
- Water-energy calculations for the design of hydroelectric power stations and pumped storage power plants.

- Designing navigable structures on internal waterways (floodgates, ship lifts, canals) and structures on the continental shelf.
- Hydraulic simulation the interaction of stationary and non-stationary flows with structures.
- Numerical modeling of wave interaction with structures for optimization of hydraulic complexes.
- Ice modeling and ice loads and impacts on hydraulic structures.
- Water exchange and water quality in port water area.
- Modeling of hydrophysical, hydraulic and hydrodynamic processes in the barriers of the river hydroschemes; the forecasting of their influence on the ecological situation in water object.
- Methods and models for the development and operation of water management systems; improving the reliability of water supply and water security of regions and territories.
- Transport of the pumps by water flows in urban areas
- Hydraulic structures safety; ensuring the safe operation of hydraulic structures in severe climatic conditions.
- Mathematic modeling of hydromechanical transient processes on hydroelectric power stations and pumped storage power plants and pump stations.
- Transient processes in refrigerating systems and technical water supply for thermal and atomic power plants.

**Graduates are employed in the** research and development institutions, major building organizations, architectural and construction bureaus, federal and municipal public authorities on the profession-oriented posts.

### Graduate Structural Subdivisions:

Hydraulics and Hydrotechnical Engineering Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classrooms № 510, 512  
T: +7 (495) 287.49.14 ext.1416  
E: kafgs@mgsu.ru

Scientific and Educational Center for Hydraulic Engineering, Laboratory for Fluid Mechanics and Hydraulics

Address: 26 Yaroslavskoe shosse,  
First Year Courses Building (KMK), classroom № 126  
T: +7 (495) 287.49.14 ext.1416

GEO- AND HYDROTECHNICAL CONSTRUCTION  
Complex of programs of the Institute of Hydraulic  
Engineering and Power Plant Construction

Master's Program

## «Construction of Thermal and Atomic Power Industry Facilities»

*Training Program headed by:  
Telichenko Vladimir Ivanovich, Professor,  
Doctor of Engineering, President of MGSU (NRU)  
Morozenko Andrey Aleksandrovich, Professor,  
Doctor of Engineering, Head of the Construction  
of Thermal and Atomic Power Stations Department*

### About Program:

The work in the field of nuclear power engineering is one of the prestigious, it advances you to the frontiers of science, opens perfect career perspectives and wide opportunities. Stimulation and optimization of nuclear and thermal power is one of the most priority directions of country development. Under control of our professors and lecturers you will become a qualified personnel in the area of building design of the nuclear facilities, thermal power plants (TPP) and nuclear power plants (NPP), construction material science, organization, operational and construction safety assurance of thermal and nuclear power plants. You will learn to design, build and operate special-purpose facilities, conduct scientific research in order to develop the latest technology for the nuclear industry. Special attention is paid to the reconstruction of the existing plants, decommissioning of the specific objects. Expert preparation guarantees a successful career and sustainable financial growth in the field of organization and management of the power engineering facilities construction.

### Master's Theses Themes:

- Selecting the places for the construction of research- and energy-related nuclear power reactors.
- Design of engineer-and-architectural complex of the nuclear power plants (NPP).
- Elaboration of the quality management system during the erection of critical structures of buildings and constructions of the objects of nuclear and thermal power application.
- Design of the reinforced concrete structures (RCS) and metal structures (MS) of the reactor facility taking into account their decommissioning.
- Radiation protective measures for the ecological radiation and nuclear safety supplying on the objects of NPP.
- Development of the materials for the construction of buildings and structures of nuclear and thermal power objects of use.
- Configuration of the main buildings of the thermal power plants (TPP) taking into consideration potential emergencies.



- Coast of the main buildings of TPP, NPP and also another constructions depending on the lock level of the process system.
- Research of the functional dependence «dimensions, value of the industrial site – power unit, number of power units, lock level» for TPP, NPP.
- Industrial building constructions of the NPP and their comparative effectiveness.
- Capacity optimization of the NPP construction base.
- Configurations, materials intensity and comparative efficiency of NPP with the reactors RWR (pressurized water reactor).
- Organization and technologies of TPP, NPP construction depending on the location of construction site.

**Graduates are employed in the** research and development institutions, major construction organizations, architectural and construction bureaus, construction and erection organizations engaged in construction of buildings and structures of energy facilities, regional and municipal public authorities on the profession-oriented posts.

### Graduate structural subdivisions:

Department of Construction of Thermal  
and Atomic Power Stations  
Address: 26 Yaroslavskoe shosse,  
First Year Courses Building (KMK), classroom № 320  
T: +7 (499) 183.25.83  
E: sotae@mgsu.ru

Scientific and Educational Center for Hydraulic Engineer-  
ing, Laboratory for Fluid Mechanics and Hydraulics  
Address: 26 Yaroslavskoe shosse,  
First Year Courses Building (KMK), classroom № 126  
T: +7 (495) 287.49.14 ext.1416

GEO- AND HYDROTECHNICAL CONSTRUCTION  
Complex of programs of the Institute of Hydraulic  
Engineering and Power Plant Construction

Master's Program

## «Soil Mechanics, Geotechnics and Geoecology»

Training Program headed by:

*Ter-Martirosyan Zaven Grigoryevich, Doctor of Engineering*  
*Chernyshev Sergey Nikolaevich, Doctor of Engineering*

### About Program:

Actuality of underground facilities construction which was associated exclusively with the military industry. Nowadays increased significantly. You will learn to use innovative methods for exploring the underground area and for transforming the properties of foundation soils, will become an expert in the field of research, design, construction and exploitation of buildings and facilities of various purposes with a high category of responsibility. You will master the construction in cramped conditions of urban built-up environment, specific of deep pits over 10 m., underground structures of various purposes. Our graduates are in demand not only in the construction sector, but also in a variety of sectors of the country's economy, which are connected with engineering- and- geological surveys, construction of underground structures (tunnel, open caisson, etc.) and underground parts of the buildings and facilities (small and deep foundations, fencings of pits, transformed foundations, etc.).



### Master's Theses Themes:

- Studying the strength and stability of the system «underground facility – containing mass».
- Methods for attaching and reinforcing weak rock masses in constructing underground facilities using the surface and underground methods.
- Mechanized shield tunneling methods and their impact on the underground and surface facilities located nearby.
- Mining methods of production works when constructing the underground facilities in the rock and non- rock formations.
- Engineering-and-geological surveys.
- Repair and reconstruction of underground facilities.
- Strength and stability of the filler structures of the ditches and underground facilities constructed by a surface method.
- Strength-stress state of the soil mass at the foundation of the structures.
- Construction in special soil conditions on soils with unstable structural links.
- Monitoring, safety, management of risks of the geotechnical construction facilities.

**Graduates are employed in the** research and development institutions, major construction organizations, architectural and construction bureaus, government corporations, regional and municipal public authorities on the profession-oriented posts.

### Graduate structural subdivisions:

Department of Soil Mechanics  
and Geotechnical Engineering  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classroom № 219  
T: +7 (495) 287.49.14, ext. 1425  
E: kafedramgg@mgsu.ru

Engineering Surveys and Geoecology Department  
Address: 26 Yaroslavskoe shosse,  
First Year Courses Building (KMK), classroom № 303  
T: +7 (495) 287.49.14 ext.1391

ENGINEERING SYSTEMS AND NETWORKS  
Complex of programs  
of the Institute of Environmental Engineering and Mechanization

Master's Program

## «Water Supply and Water Disposal of Cities and Industrial Enterprises»

Training Program headed by:  
Orlov Vladimir Aleksandrovich, Professor, Doctor of Engineering,  
Head of the Water Supply and Wastewater Disposal Department



### About Program:

It's impossible to imagine megacities and progressive industrial capacities without regularly and sustainable water supply. Preparation of water for drinking water supply, complex technological production processes, wastewater treatment and ecology of reservoirs constitute the activity area of particular national importance. Under control of experienced professors and lecturers you can become qualified personnel in the field of design, construction, repairs, modernization and operation of systems and facilities of water supply and water disposal in the cities and at the industrial objects of various purposes. The Program's peculiarity is in a deep study of a range of issues relating to the improvement of water supply and water disposal systems, in particular, ensuring the effects of the resource- and energy- saving effects. You will get professional skills which are regularly in demand on the job market.



### Master's Theses Themes:

- Analysis and provision of the resource- and energy-saving during the trenchless reconstruction of the water supply systems using alternative materials.
- Studying the hydraulic characteristics of polymer pipes and design of the repair and recovery works on water supply networks.
- Determination of hydraulic parameters of the pipes made of ductile iron and design of the construction-and-repair works on the water pipeline systems using the trenchless methods.
- Studying the hydraulic and strength related characteristics of the spraying polymer protective coatings of the pipelines.
- Elaboration of the algorithms and automated programs for the optimization of a choice of trenchless method aimed at restoring pressure and no-pressure pipelines.
- Protection of steel water supply networks during the construction and operation of water-bearing soils.
- Technology for recycling of the concentrate generated by reverse osmosis plants in water treatment systems.
- Zero-discharge water treatment scheme based on membrane technology.
- Improvement of the wastewater mechanical treatment facilities.
- Optimization of work of the wastewater biological treatment facilities.
- Elaboration of new technological schemes for waste water treatment.
- Solution of the problems relating to the wastewater treatment systems reconstruction.
- Improving the efficiency of processes relating to the wastewater sludge dehydration.

**Graduates are employed in the** leading design institutions and construction organizations, development organizations of all ownership forms, the relevant public authorities of all ranks, ministries and departments.

### Graduate structural subdivisions:

Water Supply and Water Disposal Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB),  
classrooms №313-317, 319  
T: +7 (499) 183.27.65, +7 (499) 183.36.29  
E: vive@mgsu.ru, voda@mgsu.ru



ENGINEERING SYSTEMS AND NETWORKS  
Complex of programs  
of the Institute of Environmental Engineering and Mechanization

Master's Program

## «Operation Technologies of Housing and Public Utilities»

*Training Program headed by:  
Rimshin Vladimir Ivanovich, Professor, Doctor of Engineering,  
Corresponding Member of the Russian Academy of Architecture  
and Construction Sciences*

### About Program:

The scale and economic resilience of any government, the quality of citizen's life, territorial and industrial development must have a strong foundation, and it's an effective municipal complex. Our apartments need to be light and warm, buildings need to be solid and beauty, yards should be comfortable, clean and safely. Significantly increased requirements to the quality of the housing and public utilities functioning, necessity of intensive development of science-and-technical solutions in this area, and also shortage of managerial personnel in the sector define the peculiarities of the content and methodology of master's training in the proposed program. You will become an executive in the sphere of urban economy, who will possess the instruments of actual solutions in the issues relating to a comprehensive assurance of quality and safety of the housing-and- public sector facilities, resource saving during the exploitation of real estate objects, as well as other objectives connected with technical operation and reconstruction of buildings, structures and urban territories.



### Master's Theses Themes:

- Methodical fundamentals of energy-saving technologies for reconstruction and major repairs of built-up environment.
- Analysis of efficiency of resource- and energy-saving measures during the technical operation of engineering systems.
- Ecological reconstruction of built-up environment.
- Use of alternative energy sources during the reconstruction of housing and public utilities facilities.
- Optimization of planning of and management over the technical operation of buildings and engineering systems.
- Ecological effects of industrial wastes application in the exploitation of roads.
- Science-related fundamentals of technical maintenance (monitoring) of span structures in the cities.
- Environmental-and-urban-planning concepts of cities transport systems design.
- Environmental safety of a city street.
- Engineering methods for monitoring of building structures safety and Selection of the efficient methods to monitor technical state of buildings and engineering systems during the exploitation.

**Graduates are employed in the** investment and construction, developing and operating organizations of all ownership forms, specialized public authorities of all ranks: councils, prefectures, municipalities, municipal governments – sector ministries and departments.

### Graduate structural subdivisions:

Housing and Public Utilities Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classroom № 608  
T: +7 (499) 183.38.92, +7 (495) 287.49.14 ext. 1450  
E: kafegragkk@mgsu.ru



ENGINEERING SYSTEMS AND NETWORKS  
Complex of programs  
of the Institute of Environmental Engineering and Mechanization

Master's Program

## «Energy Conservation and Energy Efficiency in Buildings»

*Training Program headed by:  
Gagarin Vladimir Gennadyevich, Professor, Doctor of Engineering,  
Corresponding Member of the Russian Academy of Architecture and  
Construction Sciences, State Prize Laureate*

### About Program:

Energy conservation and energy efficiency currently relate to the priority objectives whose solution is connected with the economic development of the sector and the country as a whole. You will become a specialist in the most actual innovative sphere of economics: engineering, construction, exploitation and expertise of buildings with low energy consumption. The Program allows mastering the methods for analysis of the results of engineering surveys performed for the construction of energy-conservation buildings, learning develop and design the energy-conservation building, their elements and structures, also implement technologies aimed at reducing energy consumption in buildings and increasing their energy efficiency. Particular attention is paid to design solutions of the microclimate systems and environmental safety of buildings. Science-related research in the area of energy efficiency held with your participation will allow to get a unique experience for future employment.



### Master's Theses Themes:

- Designing peculiarities of the ventilation systems of the modern high-rise buildings increasing their energy efficiency.
- Methods for analyzing thermal load on the heating systems of buildings taking into account thermal engineering inhomogeneity of filler structures.
- Development of a method for analysis of the air conditions and thermal resistance of the air space in the hinged facade system with a ventilated layer.
- Studies of humidity conditions of the wall filler structure with the increased levels of insulation using a system of fastened thermal insulation with a thin plaster layer.
- Environmental challenges of use of the thermal insulation materials in filler structures of residential buildings of diverse applications.
- Development of methods for impact assessment of longitudinal filtering on the heat-shielding properties of suspended facade systems with a ventilated layer.
- Monitoring of energy conservation in buildings.
- Development of energy efficiency criteria of the construction materials and ranging them by such criterion indicator.
- Development of scientific fundamentals of the rationing of heat shielding of a building shell based on the use of specific heat-shielding characteristic
- Development of scientific fundamentals of applying heat recuperators in the ventilation systems of residential buildings.
- Development of the energy conservation principles in low-rise construction.

**Graduates are employed in the** leading research institutions, major building organizations, architectural and construction bureaus, regional and municipal public authorities on the field- oriented positions.

### Graduate Structural Subdivisions:

Department of Ventilation and Heat and Gas Supply  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classrooms № 407,  
405, 417  
T.: +7 (499) 188.36.07, +7 (499) 183.26.92

ENGINEERING SYSTEMS AND NETWORKS  
Complex of Programs of the Institute  
of Environmental Engineering and Mechanization (IEEM)

Master's program

## «Heat/Gas Supply and Ventilation»

Training Program headed by:  
*Khavanov Pavel Aleksandrovich, professor, D. Sc.*



### About Program:

Gas/heat supply and ventilation represent the most important branch of the national economy; it pertains to the engineering infrastructure of buildings, facilities, urban and rural areas. It serves to assure the energy security of a human being. Nowadays, a human life is impossible without the thermal energy that is necessary to the required micro-climate and the air quality inside buildings, and moreover to resolving of a wide range of different production objectives. You will develop into a specialist proficient in the most important branch of the contemporary economy that deals with the design, construction and operation of the engineering infrastructure of buildings and populated areas. The program will assist to master the computational methods of elements in engineering systems designated for buildings and populated areas, methods of design, installation and operation of the engineering infrastructure of buildings and populated areas. The main focus of the program is the scientific researches, concentrated on heat and mass transfer processes, that allows to obtain the profound knowledge in the course of master's degree program. This knowledge is essential in future professional activities.



### Master's Theses Themes:

- Design of a heat supply system for an inhabited locality.
- Design of a gas supply system for an inhabited locality.
- Design of an urban boiler house.
- Analysis of the improvement of the energy efficiency of heating, ventilation and air conditioning systems in a building.
- Research into the air distribution inside a building.
- Development of a circular gas distribution network for an urban area.
- Analysis of the power efficient operation of a boiler.
- Research into thermal conditions of a circular heat distribution network in a city.
- Research into the hydraulic behaviour of a heating system in a multistorey building.
- Design of heating, ventilation and air conditioning networks of a building.
- Development of a structural plan and a setup diagram for an individual heating point in a building.

**Graduates are employed in the** design bureaus and installation companies specializing in the construction of buildings and structures for different purposes, sales organizations of the engineering equipment designated for buildings and engineering networks, departments and sections specializing on the operation and maintenance of engineering networks, organizations engaged in the operation of boiler houses, heat power plants and gas networks in populated localities.

### Graduate structural subdivisions:

Department of Heat/Gas Supply and Ventilation  
Address: 26 Yaroslavskoye shosse, Building G,  
Rooms 407, 405, 417  
T: +7 (499) 188.36.07, +7 (499) 183.26.92  
E: ov@mgsu.ru; tku@mgsu.ru

ECONOMICS AND MANAGEMENT IN CONSTRUCTION  
Complex of programs  
of the Institute of Economics, Management  
and Information Systems in Civil Engineering and Real Estate

Master's Program

## «Development in the Investment and Construction Sector»

Training Program headed by:

*Kulakov Kirill Yurievich, Professor, Doctor of Economics*

*Belyakov Sergey Igorevich, Associate Professor, Ph. D. in Economics*



### About Program:

Development means professional entrepreneurial activities aimed at preparing and transforming the territories, lands and real estate objects for the purpose of the new application, which provides an increase in their cost. In modern conditions a development is the most current and progressive form of project management in the investment-and-construction sector, which allows finding the optimum combination of a location, functionality and cost of the property. You will plunge into aspects of business planning and evaluation of the investment projects efficiency, manage a project at its investment phase and also being engaged in modeling of the development projects financing. Program is accredited by British Royal Institution of Chartered Surveyors (RICS).



### Master's Theses Themes:

- Optimization of methods, principles and criteria for the formation of the development company's real estate portfolio.
- Peculiarities of selection of the development company's portfolio strategies.
- Optimization of methods, principles and criteria for the formation of the development company's investment portfolio.
- Methods for selecting the optimal model of the development company's portfolio strategies in the real estate market.
- Methods for building optimal schemes of the functions and management tasks distribution in the process of real estate creation.
- Methods for making investment decisions by a development company and for assessing their efficiency.
- Methods for organization of the development company's strategic investment portfolio management.
- Methods for organization of the development company's strategic real estate portfolio management.
- Optimization of models and schemes of the development company's relations with other participants of real estate market.
- Optimization of models and schemes of the development company's communication with other participants of real estate market.

**Graduates are employed in the** investment, developer, consulting companies, construction and financial organizations, realtor agencies, evaluating and insurance companies, regional and municipal public authorities on the field-oriented positions.

### Graduate structural subdivisions:

Organization of Construction and Estate Management Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classroom № 612  
T: +7 (499) 183.85.57  
E: osun\_kaf@mgsu.ru

## ECONOMICS AND MANAGEMENT IN CONSTRUCTION

Complex of programs  
of the Institute of Economics, Management and Information Systems  
in Civil Engineering and Real Estate

Master's Program

# «Surveying: the System Analysis of the Land-and-Property Complex Management»

Training Program headed by:  
Grabovyy Petr Grigoryevich, Doctor of Economics.



### About Program:

Surveying is a comprehensive, systemic management of real estate at all stages of the facilities life cycle which is aimed at greatly improving efficiency in the interests of owners, real estate users, government and society as a whole. Surveying supposes possession of innovative capacity evaluation methods, risks of project commercialization, technical and economic analysis of projects' objects and production. You will learn to assess risks of investment and construction project, will master the methods of hedging, will be able to carry out technical and other project expertise, will learn what does contract tendering mean and how to conclude contracts. During the process of education you get a real skill of operating, organizational and management activities being proficient in methods and mechanisms for attracting and applying geographic information systems (GIS) for the management of land-and-property complex. Program is accredited by British Royal Institution of Chartered Surveyors (RICS).

### Master's Theses Themes:

- Improving the organization and management over the land-and-property complex of the apartment building.
- Research of location influence on the market value of real estate objects (for example: the real estate of Moscow).
- Development of mechanisms for the planning of land-and-property complex development (for instance: Moscow).
- Improvement of an organizational mechanism of the relationship of the parties to the investment projects for the development of the city's district engineering communications.
- Methodical fundamentals of monitoring for technical state of the company's land-and-property complex.
- Development of technology for making managerial decisions in the field of profitable real estate operation.
- Methods of determination of the management companies' financial-and-economic activities efficiency.
- Development of methods for management of the housing and modernization of a region's (a district's) housing fund.

**Graduates are employed in the** investment, construction, financial organizations, realtor agencies, evaluating and managing companies, profile and related financial and economic structures of federal, regional and municipal public authorities.

### Graduate structural subdivisions:

Organization of Construction  
and Estate Management Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classroom № 612  
T: +7 (499) 183.85.57  
E: osun\_kaf@mgsu.ru



ECONOMICS AND MANAGEMENT IN CONSTRUCTION  
Complex of programs of the Institute of Economics,  
Management and Information Systems  
in Civil Engineering and Real Estate

Master's Program

## «Forensic Construction-and- Technical and Value Examinations of Real Estate Objects»

Training Program headed by:

Grabovyy Kirill Petrovich, Doctor of Economics

Co-Director: Butyrin Andrey Yuryevich, Doctor of Law

### About Program:

Forensic engineering and value examinations are kind of engineering-and-technical and value examinations carried out in criminal and civil processes. Expert examination and quality control during the life cycle of real estate objects constitute one of the tools for man aging the investment-and-construction, housing-and-public and territorial activities for ensuring the efficient use of the natural, financial and human resources and high-quality living environment of the population. You will receive a wide range of knowledge, including theoretical, methodological and legal fundamentals in forensic engineering and value expert examination, provisions of procedural law in relation to the forms of implementation of special engineering-related knowledge, researchers with regard to design and executive documentation, field investigations of buildings, structures and facilities, as well as land plots functionally connected with them. Program is accredited by British Royal Institution of Chartered Surveyors (RICS).



### Master's Theses Themes:

- Theoretical, methodical, organizational and procedural problems of commissioning and performing forensic engineering and value expert examination in arbitration proceedings.
- Theoretical, methodical, organizational and procedural problems of commissioning and performing forensic engineering and value expert examination in civil proceedings.
- Theoretical, methodical and organizational problems of the field investigations of the buildings, structures and facilities in performing forensic engineering and value expert examination.
- Theoretical, methodical and organizational problems of the implementation of the special construction and technical knowledge in court proceedings.
- Problems of formation and development of the forensic engineering and value expert examination methodology.
- Problems of formation and development of the special construction and technical knowledge used in the Russian court proceedings.
- Analysis of the methods of economic expert examination of the investment-and-construction projects with shared participation of federal and interethnic property.
- Problems of implementation of the value investigations in commissioning and realizing comprehensive and committee's forensic engineering and value expert examination.

**Graduates are employed in the** government expert agencies of the Russian Ministry of Justice, systems of expert institutions and non-government forensic-and-expert examination institutions, audit, valuation and consulting companies, law offices, relevant departments in large industrial, construction and development companies.

### Graduate structural subdivisions:

Organization of Construction

and Estate Management Department

Address: 26 Yaroslavskoe shosse, Building «G»,

Educational Laboratory Unit (ULB), classroom № 612

T: +7 (499) 183.85.57

E: osun\_kaf@mgsu.ru



ECONOMICS AND MANAGEMENT IN CONSTRUCTION  
Complex of programs of the Institute  
of Economics, Management and Information Systems  
in Civil Engineering and Real Estate

Master's Program

## «Value engineering»

*Training Program headed by:  
Sborschikov Sergey Borisovich, Doctor of Economics.  
Silka Dmitriy Nikolaevich, Doctor of Economics,  
Head of the Department of Economics and  
Management in Construction*

### About Program:

Decision-making on project implementation cannot be imagined without preliminary and subsequent assessment of its effectiveness, where value criterion has crucial significance. Value engineering is considered as essential controlling system required for all participants of investment and construction activities. In the educational process, value engineering is the area of activity which is based on legal, regulatory and methodological documents created as a result of state, sectorial and departmental research works, activities of self-regulatory organizations, unions and associations of construction enterprises taking into account the knowledge transfer of countries with advanced market economy. Students develop skills of management of construction products value for their practical activities at all stages of the life cycle: pre-project study (project concept, feasibility studies), design (project documentation), construction (investment program, cost estimating of contracts, working and executive documentation), reconstruction, major and current repairs (cost estimate, documentation on operational stage). Obtained knowledge allows you to substantiate the cost in the selection and use of effective technologies, materials, means of mechanization and also it guarantees the cost cutting at the operational stage of buildings and constructions taking into account their uniqueness.

### Master's Theses Themes:

- Substantiation of the alternative choice of investment and construction project for achievement the investor's rate of return.
- Formation methodology of the project competitive documentation and the principals formation of revised budget.
- Management of all stages of the project budget formation and implementation by the customer (the technical customer).
- Substantiation of the technical and economical solutions choice by design organization for escalation consumer properties of construction products.
- Project value optimization by using innovative technologies and resources at the design stage.



- Management of the expenses by types work, cost items which influence on the project realization cost by contracting organization.
- Development and congruence of construction works schedules, capital investment plans and the project budget.
- Development of a cost centers model and project cost control in the frames of the planned result.
- Control methods of the project cost value and development of activities of corrective and preventive nature.
- Development of the reserves formation methodology of construction product cost reduction by construction enterprise.
- Development of norms and rates for types of works.
- Substantiation of the technologies and construction power choice for cost reduction at the exploitation stage.
- Organization of procurement and logistic activities of the designed project.

**Graduates are employed in the** investment and construction companies, at customer and developer services, leading engineering organizations, construction and exploitation organizations (general contracting and subcontracting organizations), administration and exploitation companies.

### Graduate structural subdivisions:

Department of Economics  
and Management in Construction  
Address: Moscow, 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK), Room № 302  
T: +7 (499) 183.85.57  
E: kafedraemc@mgsu.ru

DIGITAL TECHNOLOGIES IN CIVIL ENGINEERING  
Complex of Programs of the Institute  
of Economics, Management and Information Systems  
in Civil Engineering and Real Estate (IEMISCERE)

Master's program

## «Information Modeling in Civil Engineering»

*Training Program headed by:*

*Volkov Andrey Anatolievich, Rector of NRU MGSU, Professor,  
Doctor of Engineering, Associate Member of the Russian Academy  
of Architecture and Construction Sciences*



### About Program:

Any construction activity can be considered as a set of targeted actions which are related to the generation and processing of the information dealing with aspects of the existence of a construction facility at each stage (from the feasibility study in terms of its construction to its demolition and waste utilization). This process is not only a formal set of design and budget-related documents, that apply to a building or a structure, but also a huge data amount, related to the persons involved in the construction activities, as well as their interaction, executive decision making processes at various stages of design planning, organization and control, construction and operation of a building. Any effective work with significant volume of information is only possible in the automated mode with a pro-active use of data computation and storage capacities.

The mission of the program is to offer the profound and subject-oriented training of highly skilled specialists who can manage the process of information modeling at each stage of construction facility (planning, organization, coordination, performance control, management efficiency).

### Master's Theses Themes:

- Development of information models of construction facilities at each stage of their lifespans.
- System integration in the field of information modeling of construction facilities' subsystems.
- Management of the assimilation and development of information modeling technologies within an organization.
- Using information modeling technologies to manage the lifespan of a construction facility.
- Design of the composition of information models, development of data banks and libraries, their verification for the specified criteria.
- Adjustment of information models for construction facilities with a view to their further transfer to/from software programmes and the transfer implementation.
- Development of interfaces, formats for the data exchange between information models, having different levels and designated for various subsystems.

**Graduates are employed in the** hi-tech companies, research institutions and investment/financial companies within the construction industry, construction and operation companies applying information modeling technologies.

### Graduate structural subdivisions:

Department of information systems, technologies and automation in civil engineering

Address: 26 Yaroslavskoye shosse, Building ULK, Room 311  
T: +7 (495) 287.49.14, +7 (495) 287.49.19, ext. 3042, 3043, 3046

E: [istus@mgsu.ru](mailto:istus@mgsu.ru)





DIGITAL TECHNOLOGIES IN CIVIL ENGINEERING  
Complex of Programs of the Institute  
of Environmental Engineering and Mechanization (IEEM)

Master's program

## «Smart City. Technologies»

*Training Program headed by:*

*Volkov Andrey Anatolievich, Rector of NRU MGSU, Professor,  
Doctor of Engineering, Associate Member of the Russian  
Academy of Architecture and Construction Sciences*

*Co-executive Director: Chelyshkov Pavel Dmitrievich,  
Ph. D in Engineering, Director of the Department of Automation  
and Power Supply*



### About Program:

Regional development in the context of the digital transformation places new demands on professionals who shape the branches of the economy dealing with the civil engineering and urban economy. A smart city represents an interdisciplinary notion that unites technological, informational, social, ecological, transport-related, and other objectives. Our master's program entitled "Smart City. Technologies" serves to train next level professionals having a systemic knowledge of the technologies applied to control life-support systems designated for cities and urbanized areas. This program forms the understanding of the concept of "smart cities", the knowledge of the technological systems serving the urban economy (power supply, water supply, water disposal, heat supply, telecommunications and communications) as well as the ability to develop, implement and apply cyber-physical systems designated for the operation of the urban economy.

### Master's Theses Themes:

- Urban data management technologies
- Technologies for the fail-safe operation of the urban infrastructure
- Technologies for the power-efficient operation of the urban infrastructure
- Technologies for the change management in the urban infrastructure
- Technologies for the operation of electric power supply networks
- Technologies for the operation of water supply networks
- Technologies for the operation of water discharge networks
- Technologies for the operation of heat supply networks
- Technologies for the operation of communications networks
- The optimality analysis of automated control systems
- Methodologies for the optimization of control algorithms designated for the infrastructure of urban areas
- Informational modeling of systems designated for the control over the infrastructure of urban areas.

**Graduates are employed in the** construction and development companies, government authorities, research and development organizations.

### Graduate structural subdivisions:

Department of automation and power supply  
Address: 26 Yaroslavskoye shosse, Building G, Room 203  
T: +7 (499) 183.50.47  
E: aie@mgsu.ru



09.04.01

# Informatics and Computing Technology

Master's Program of the Institute of Economics, Management  
and Information Systems in Civil Engineering and Real Estate

## «Modeling of Automated Information Processing Systems, Management and Design Systems in Civil Engineering»

*Training Program headed by:*

*Ginzburg Aleksandr Vitalyevich, Professor, Doctor of Engineering,*

*Head of Department of Information Systems, Technologies and Automation in Construction*



### About Program:

Today it is impossible to imagine a society beyond the information environment. The construction industry is closely related to information and computer technologies. The purpose of this program is a fundamental and application-oriented preparation of qualified cadres in the area of the systems for information processing, management, design and intelligent automation for a wide range of branches in the real sector of economy. Our graduates are IT- specialists who have knowledge of setting the design and management objectives in the field of engineering, skills of analysis, modeling and automation of such objectives solution. Several international cooperation programs are realizing at the department. The best masters have the opportunity to join a semester abroad in the frames of academic mobility programs. Building information modeling, geo-information modeling of territories and infrastructure constitute an area of your future activities.

### Master's Theses Themes:

- Design of scalable corporate information systems (CIS).
- System integration in automation of objects and processes control.
- Design of distributed information systems.
- Design of cloud information systems.
- Perspective and situational energy and resource modeling and monitoring.
- Multi-dimensional (3D, N-D) modeling and virtual reality.
- Design of systems for automation of production, integrated systems of production, objects and processes control.
- Information and production logistics systems.
- Design of technically bionic systems for buildings control («smart», «green», «active», «passive» buildings).

**Graduates are employed in the** high-technological, research, investment and financial sectors of construction and another industrial branches, project and IT-companies, profile structures of federal, regional and municipal public authorities.

### Graduate Structural Subdivisions:

Information Systems, Technology  
and Automation in Construction Department  
Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK)  
T: +7 (495) 287.49.14,  
+7 (495) 287.49.19 ext. 3042/3043/3046  
E: istus@mgsu.ru



15.04.03

# Applied Mechanics

Master's Program of the Institution of Basic Science

## «Mechanics and Computer Modeling in Construction»

Training Program headed by:

Andreev Vladimir Igorevich, Full Member of the Russian Academy of Architecture and Construction Sciences, Professor, Doctor of Engineering, Head of the Strength of Materials Department



### About Program:

Mechanics and computer modeling in professional hands are almost universal tool which helps to make a math models as the basement for future strategic and tactical decisions. Any engineering science is always based on the fundamental knowledge associated with the modeling, computing systems, analyses and forecasts. Program allows preparing demanded and top-ranked specialists who could find the appliance to their forces in lots of knowledge-intensive industries such as manufacture, economy, management and expert activities. You could carry out theoretical, computer-aided and experimental investigation of the science-related and technical problems. You will get skills of application of advanced technologies of computer-aided design based on an intensive application of multivariate finite element modeling and technologies of development of Digital three-dimensional model of the structure and all its components. The course includes investigation of mechanics problems of composite structures, contact interaction and damage, destruction and reliability.

### Master's Theses Themes:

- Studying the different models during the interaction of a facility with a basement.
- Analysis of the large-span facility on various dynamic effects.
- Research of the elastic properties of structures material, including composite materials.
- Numeric studies of the assessment of projectile high-speed penetration into a plate made of multilayer composite material.
- Optimization and strength analysis of the bearing structure of buildings and facilities.
- Assessment of reliability of the structural designs of a multi-element system.
- Methods for the acoustic resonance of non-destructive diagnostics problems.
- Analysis of a multi-storey monolithic building for progressive collapse resistance.

**Graduates are employed in the** design-and-engineering and scientific organizations, laboratories in departments which make structural evaluation and the design of complex construction projects, also dealing with issues of different materials strength.

### Graduate structural subdivisions:

Strength of Materials Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classrooms №103-109  
T: +7 (499) 183.43.29, +7 (499) 183.85.59  
E: sopromat@mgsu.ru

Applied Mathematics Department  
Address: 26 Yaroslavskoe shosse,  
First Year Courses Building (KMK), classroom № 414  
T: +7 (499) 183.33.01  
E: kafedraipm@mgsu.ru



38.04.01

# Economics

Master's Program of the Institute of Economics, Management and Information Systems in Civil Engineering and Real Estate

## «Economics in the Investment and Construction Sector»

Training Program headed by:  
Lukmanova Inessa Galeevna, Professor, Doctor of Economics



### About Program:

Economics of civil engineering is one of the most important and accountable directions of industry development in conditions of fast changing reality. If you make a decision to be an economist, will definitely choose such field of activity which is connected with specific real sector. It is a guarantee of employment in the specialty. In this meaning construction is the most capacious, advanced and dynamic developing segment of the market. In our university you will be learnt the branch economy along with general economical competence. You will get the necessary engineering knowledge and skills of economical modeling and forecasting in major, infrastructure, social-oriented, multiplicative and high-technology branch – construction. Modern construction is oriented to the new level of economic analysis and it's the estimated value of all life cycle of buildings and constructions on the stage of investment intention and project. You will learn to manage the investment and building projects and programs, will become the specialist in managing of innovations and a budget planning at all levels together with professional competences in the area of pricing formation and estimated rationing.

### Master's Theses Themes:

- Improvement of the methods for evaluation of housing construction facilities.
- Risks management in the process of implementation of investment construction projects.
- Influence of latent risks on the process of implementation of the investment and construction projects.
- Formation of a management innovations portfolio and their implementation at construction companies.
- Improvement of an investment policy in the field of housing construction in conditions of socially- oriented economy.
- Economic substantiation of innovative solutions in development projects.
- Development of a mediation's mechanism to settle economic disputes in construction.
- Formation of an efficient organizational structure of a construction company's management.
- Development of a construction company's integrated system of risk management.
- Transfer methods of the new technologies in a construction sector.

**Graduates are employed in the** investment and construction, developing and operating organizations and at the businesses of the real economy sector, industry-specific and cooperating financial and economic structures of federal, regional and municipal governments.

### Graduate Structural Subdivisions:

Economics and Management  
in Construction Department  
Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK),  
classrooms № 302, 303  
T: +7 (495) 287.49.14 ext. 3083, 3129  
E: euis@mgsu.ru



38.04.02

# Management

Master's Program of the Institute of Economics, Management and Information Systems in Civil Engineering and Real Estate

## «Financial Management at the Enterprises of the Investment and Construction Sector»

Training Program headed by:  
Verstina Natalya Grigoryevna, Professor, Doctor of Economics,  
Head of the Management and Innovation Department



### About Program:

Management is a science and art to manage. In front of you there will be opened the wide variety of opportunities for managing in the biggest and the most capital-intensive real sector of economy which will never lose significance. People are always needed habitation, business requires a space, economy needs development and growth. The leaders of this economy sector are needed the skill to see through time, to manage the project and collective, to calculate many steps ahead, realizing the planning almost in 5D system that is taking into account time and cooperation of all the project elements. Our graduates are purposeful and ambitious professionals who are ready to take a responsibility for managing enterprises and collectives, programs and projects, can analyze, set a challenge and make a decision of production targets in all levels, look for alternatives and reach a compromises, build and effectively bring to life the most courageous plans, implement innovations, see the future. Combination of the traditional methods of education with conducting the science-related research in the area of managing finance of the investment-and-construction sector companies will provide an opportunity (subject to the presence of a basic economic education) to gain knowledge guaranteeing the employment in the construction sector and dynamic career growth.



### Master's Theses Themes:

- Studying the influence of key financial factors on the value of a developer company.
- Studying and development of the budget management's methods in the system company's in financial management of an investment-and- construction sector.
- Studying of reorganization's reserves of a company's financial service in the conditions of extensive branch network.
- Comprehensive justification of approaches to the formation of a well-minded system of cash flow management on the example of a holding-type company.
- Estimation of an investment-and-construction company's business cost and formation of measures for increasing it.
- Increasing an investment-and-construction sector company's competitiveness based on the rationalization of business reengineering methods.
- Development of a set of measures aimed at increasing efficiency of financial resources management in the area of investment management in investment-and-construction sector company.
- Development of complex managerial solution aimed at increasing efficiency of a company's performance based on the formation of an expenses management system.
- Development of complex financial instrument to motivate a construction company's personnel.
- Restructuring of organization-and-economic mechanism of an engineering company's management in conditions of business development.

**Graduates are employed in the** branch and another industrial enterprises, investment and construction, developing and operating organizations financial and analytic companies as well as enterprises of any branch orientation, which are realizing own construction projects.

### Graduate Structural Subdivisions:

Management and Innovation Department  
Address: 26 Yaroslavskoe shosse,  
Educational Laboratory Building (ULK), classroom № 217  
T: +7 (495) 651.81.82, +7 (495) 287.49.14 ext. 3034  
E: fmen@mgsu.ru

38.04.10

# Housing Services and Communal Infrastructure

Master's Program of the Institute of Economics, Management  
and Information Systems in Civil Engineering and Real Estate

## «Management of Housing Services Development and Communal Infrastructure Modernization»

*Training Program headed by:  
Kirillova Ariadna Nikolaevna, Professor, Doctor of Economics*



### About Program:

Modern cities have complex multilayer structure, management of housing and public utilities is becoming a real art which claims a system approach and wide competences in different fields of knowledge. Sustainable development of large cities economy depends on steady functioning of housing and public utilities as the main life-supporting system. Innovative science and technical decisions are involved for providing the effective work of communal complex, it supplies the basement of comfort, stability and safety in every house, flat and in global level. Under control of our professor and lecturing staff you will learn to develop strategic, operative and corporative decisions ensuring quality and comfort for the objects, you will master modern technologies of manufacturing and managing of housing and public complex enterprises on the government and municipal authorities' level. Economy, personnel management, essential engineering knowledge, were allowed you to become demanded employee and authoritative leader of any level in every Russian region.

### Master's Theses Themes:

- Optimization of organization forms of housing and public complex management.
- Organization of the state supervision in housing and public sphere.
- Development of energy efficiency criteria during modernization and exploitation of engineering infrastructure objects.
- The choice of organizational and technological methods of planning and monitoring activity on management of apartment houses.
- Formation and the choice of methods and mechanisms of the state-and-private partnership in housing and utility public utilities.
- Perfection of organizational and economical methods for decision-making on the exploitation phase of real estate objects' life cycle.

- Organization of the residential real estate property' technical investigation for choice substantiation of the required work for capital construction and reconstruction.
- Methods of increasing the efficiency of professional management and technical exploitation of real estate objects.
- Development of organizational and technical project solution at formation of the parking territory.
- Selection methods of the functional model management of the objects of residential and communal realities.
- Management methods of operational portfolio of residential real estate objects with the goal of increasing the operating efficiency of managing companies.

**Graduates are employed in the** housing inspections, repair-and-construction and operating organizations of all ownership forms specialized public authorities of all levels: councils, prefectures, municipalities, municipal governments - sector ministries and departments.

### Graduate structural subdivisions:

Organization of Construction  
and Estate Management Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classroom № 612  
T: +7 (499) 183.85.57  
E: osun\_kaf@mgsu.ru

Housing and Public Utilities Department  
Address: 26 Yaroslavskoe shosse, Building «G»,  
Educational Laboratory Unit (ULB), classroom № 610  
T: +7 (499) 183.38.92, +7 (495) 287.49.14 ext. 1450  
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