

## **Moscow State University of Civil Engineering (National Research University)**

**Master's degree program:** Environmental Engineering in Construction

**Degree:** MSc in Civil Engineering

**Language of study:** English

**2 years of study | on-campus | 350 000 RUB per year**

**Head of the training:** Alekseev Evgeny Valeryevich, Doctor of Sciences, Professor

**Program Coordinator:** Kurochkina Valentina A., PhD of Science, Associate Professor

**E-mail:** vive@mgsu.ru, voda@mgsu.ru

**Key terms:** environmental quality, environmental protection, sustainable development, rational use of resources/nature management, ecology of water resources, construction as a factor of anthropogenic impact, assessment of the state of environmental components (soil, water and atmospheric air), water management, water engineering.

### **1. About the program**

Master program “Environmental Engineering in Construction” has a twofold focus. Sustainable environment development is studied through disciplines like hydrology, ecology of water resources, city ecosystems, environmental management, water supply of the enterprises and settlements. And ways to protect environment with chemical technologies are studied with focus on technologies for water purification.

Much attention in the program is devoted to the in-depth study of physical-and-chemical behavior and processes to gather drinking water from surface and underground sources, purification of utility and industrial sewage, technologies for disinfection of product water and disposal of the resulting sediment, which can reduce the negative impact from industries on the environment.

You will also learn to monitor quality of water facilities, to model water treatment processes, to conduct environmental impact assessment of the sewage and sludge treatment facilities and processing of rainfall, integrated water resources management.

You will research causes of negative environmental impact from new construction, and its prevention measures, including modern green, energy-saving technologies for the sustainable use of natural resources.

Students will receive specialized training in environmental management and regulation, which will enable them to apply their knowledge in environmental management and expert evaluation of engineering.

Master program "Environmental Engineering in Construction" enables students to become qualified specialists who are able to develop, design, adjust, operate and improve environmental protection equipment and technology; organize environmental protection activities at industrial complexes; carry out evaluation of projects, technologies and productions in order to achieve maximum environmental safety of human economic activity and reduce the risk of anthropogenic impact."

The authors and developers of the program are leading experts in civil and environmental engineering.

## **2. Practical skills**

Graduates of the Master program "Environmental Engineering in Construction" have a good theoretical and practical training that enables them to perform their functional duties and meet the current scientific and technical requirements. With practical experience in environmental and civil engineering research and management, they are in demand as qualified specialists.

Being advanced in computer-aided design, with the skills of independent scientific and practical work, the ability to apply environmental protection technologies, to use normative documents, and to perform calculation tasks, graduates of the program have a wide range of employment opportunities for various vacancies and positions, such as chief engineer, project manager, head of technical supervision department, etc.

The most competitive advantages of the program are the involvement of Russian and international expert practitioners in the teaching staff and the possibility to promote the program not only in Russia but also abroad. The high level of knowledge of chemical-physical and engineering principles that form the basis of environmental engineering technologies will enable the program graduates to establish themselves as responsible employees in the field of environmental engineering, to solve modern challenges in the field of construction and environment of any complexity.

## **3. Competitive advantages of the program**

The main objective of the program is to train environmental engineering professionals with advanced knowledge and skills, capable of dealing with a wide range of environmental and civil engineering tasks. The competitive advantages of this program include the opportunity to:

- improve management, organizational and team-building skills in the process of training;

- gain design skills in the information modelling technology system (TIM/BIM-technology);
- use the latest study aids and technologies;
- practical training in major Russian and international universities and companies, and to become familiar with the labor market and the latest equipment;
- comprehensive development of students' research and practical skills while participating in the implementation of training and research projects in cooperation with governmental organizations, research institutions and leading enterprises.

#### **4. Teaching and learning process**

Master program “Environmental Engineering in Construction” program has been prepared with the participation of leading experts and managers from major construction companies and government agencies.

The disciplines in the speciality can be divided into two blocks: theoretical - scientific research and practical - project-oriented.

The objective of the Master's program is to acquire knowledge of the scientific foundations, methodology, subject, objects and tasks in the field of environmental engineering in construction; to acquire skills to use this knowledge in solving specific problems in the field of construction, environmental protection.

#### **5. Internships and employment**

Together with program partners, students participate in hackathons, seminars, meetings with industry experts, interact with representatives of leading Russian and international companies in the field of construction, environmental protection and conservation.

The interaction is carried out through coaching sessions, guest lectures, expert analysis of cases, and visits to companies (including remote visits).

During their studies, students undertake internships in leading Russian and international partner companies of the program, implementing their own projects.

Within the framework of the program, students have two practice areas: academic and research training and industrial work placement.

Educational and research training is focused on obtaining the necessary competences and skills for writing a Master's thesis in the sphere of Environmental Engineering in Construction.

The industrial work placement is focused on obtaining necessary competences and skills for further employment in the chosen field of study. The key criterion for choosing the place of employment is the company's commitment to the projects in the field of construction, environmental protection.

## 6. Career

During training and participation in practical work placement, students gain the necessary competencies, connections, support (references) for employment in large Russian and international corporations, state institutions, research organizations in the sphere of construction, environmental protection and conservation.

Career paths for graduates of the program:

- work as specialists and managers in companies involved in the design and implementation of projects related to the construction of both new and repurposed, reconstruction of existing construction facilities of various purposes, etc;
- work in the operation, reconstruction, repair and modernization of water supply and wastewater disposal systems and facilities in cities and at industrial sites for various purposes;
- working for public and private property management companies in the field of urban and municipal services;
- working for government agencies regulating ecological and construction activities;
- working for various organizations implementing private, public contracts and target programs in the field of environmental and civil engineering.