



HOUSING AND COMMUNAL SERVICES ECOLOGY

MASTER'S PROGRAMME DEGREE



PROGRAM ADVANTAGES

- ✓ The program is based on the experience of participation in projects to ensure environmental safety and sustainable development of urban areas, cooperation with design and research organizations, utilities. This makes the program as close as possible to the modern practice of enterprises.
- ✓ Practical teachers are involved in creating the program and conducting the classes.
- ✓ The program integrates massive open online English courses on key issues of environmental safety and the efficient use of resources, which, in addition to professional knowledge, can improve language training.
- ✓ Lectures and master classes by leading domestic experts in the field of industrial and environmental safety, labor protection, joint creative projects and conferences are regularly held.
- ✓ The opportunity to participate in the student exchange program with partner universities.
- ✓ The ability to combine training in a new popular area with work in practice due to the successful program format.



STUDYING PROCCCESS

120 credits.

Lectures, practical classes and independent work, industrial and research practices



SUSTAINABLE URBAN DEVELOPMENT

- Features of urban ecosystem in terms of ecosystem concept.
- Features of the vegetation of the city.
- The species diversity of the cities of flora of natural zones of Russia.
- Ways of vegetation formation at different stages of history.
- Ecological niches in the city as a habitat for flora and fauna.
- Features of the animal world of the city.
- Ways of formation of the animal world at different stages of history.
- The species diversity of the cities of the fauna of natural zones of Russia.
- The future of urban ecosystems, ways to solve the problem.



ECOLOGY AND GEOCHEMISTRY OF URBAN LANDSCAPES

- Tasks of ecology and geochemistry of urban landscapes.
- Elementary landscapes of urban areas.
- Local landscapes (locality) of urbanized territories and the principles of their typology.
- Geochemical principles of ecological and geochemical taxonomy of cities.
- Ecological and geochemical assessments of the state of urban pollution.
- Research methods.



ENVIRONMENTAL NORMS AND REGULATIONS

- Environmental norms and standards as tools for environmental management in housing and communal services.
- The role of regulation in ensuring the sustainable development of environmental and economic systems.
- The combination of management tools and the effectiveness of their use.
- Stability of natural and natural-technogenic systems.



- Influencing factors.
- The reactions of organisms and ecosystems to impact.
- System of regulation in the field of quality assessment and use of atmospheric resources, water bodies, land use, waste management: basic principles and approaches.
- Current documents and prospects for modernization.
- Rationing based on the concept of risks.
- Rationing for housing and communal services in connection with the implementing of BAT.



REGIONAL GEOECOLOGY AND URBOGEOECOLOGY

- Introduction and general provisions of geoecological assessment.
- Geoecological conditions of territories and factors of their formation.
- Lithogenetic basis of regional ecology.
- Geoecological zoning of territories.
- Urbogeoecology, as part of regional geoecology.
- The foundations of urban structures.
- Methods of changing the properties of soil bases.
- Hydrogeology and hydrology of cities.
- Problems of water supply and wastewater in cities.
- Underground workings in cities.
- Urban soil.
- Construction and operation of the subway in various conditions.
- Geological processes and phenomena in cities.
- Monitoring the natural urban environment.
- Recreational areas.



ENVIRONMENTAL AND URBAN SAFETY MONITORING

- Environmental monitoring.
- Monitoring results as a basis for decision making.
- Local environmental monitoring.
- Monitoring of pollution sources in cities: specifics of housing and communal services.
- Medical and environmental monitoring.
- Observations and control of atmospheric air and surface water.
- Soil monitoring.
- Monitoring of the geological environment.
- Monitoring live systems.
- General concepts of biological monitoring.
- Bioindication.
- Chemical and physico-chemical methods of eco-analytical control of environmental components.
- Remote control methods.
- The main types of environmental impacts of housing and communal services objects and their control.
- Automated environmental monitoring in cities.
- Domestic and foreign experience.
- Environmental monitoring of specific and priority pollutants and types of impacts.



RESOURCE AND ENERGY EFFICIENCY OF HOUSING AND COMMUNAL SERVICES

- Modern energy policy and energy strategy in housing and communal services.
- Energy and resource management.
- Energy and environmental audit of enterprises.
- Energy intensity of production processes and its regulation.
- International cooperation in the field of energy and resource efficiency.



ENVIRONMENTAL PROBLEMS OF URBAN WATER USE

- Water supply systems of cities.
- Their effectiveness and problems of use.
- Water treatment: modern technologies.
- City wastewater: a system for collecting and treating wastewater.
- Solid sediment in wastewater treatment.
- Environmental support of water supply.
- Innovative technologies.



REGIONAL AND MUNICIPAL MSW MANAGEMENT SYSTEMS

- The problem of waste generation.
- Waste in the environment.
- Stability and resilience of ecosystems to pollution.
- Ensuring environmental safety when handling waste.
- Processing, utilization and neutralization of industrial waste.
- Additional sources of solid waste.
- Wastewater.
- Gas emissions.
- Sources of generation and methods for processing waste with a high content of organic substances.
- Technologies for sorting and processing household waste.
- Landfills for the disposal of industrial waste.
- Recycling as recycling.



LANDSCAPING URBAN AREAS

- Landscape and other forms of territorial planning.
- Scientific and methodological principles of landscape planning.
- Regulatory support for landscape planning.
- Rationing and standards of the state of the environment and permissible anthropogenic impacts.
- The structure of the landscape plan and the stages of its preparation.
- The principles of building maps.
- The use of landscape planning in solving industry problems.
- Landscaping of built-up areas.
- The formation of the ecological framework of the territory: the most important principles and criteria.
- Landscape architecture and design.
- Features, problems and tasks of landscape planning in Russia and abroad.



STUDENTS FEEDBACK



The program starts in 2020. However, when developing it, we were guided by the opinion of our graduates who became leading experts in the field of environmental safety management of the urban economy and sustainable development of urban areas. Many of our graduates declare the need for training specialists in this area.



HEAD OF THE PROGRAMME

MARGARITA MIKHAILOVNA REDINA



Doctor of Economics, Associate Professor; Head of the Department of Applied Ecology, Faculty of Ecology.

Thesis: “Environmental and economic analysis of the activities of enterprises in the oil and gas industry.”

FIELDS OF SCIENTIFIC INTERESTS:

environmental management, environmental safety in the oil and gas sector, modeling of environmental pollution, innovative technologies in education for sustainable development.

Author of scientific articles in peer-reviewed Russian and foreign scientific journals (Higher Attestation Commission, SCOPUS, Web of Science).

Regularly gives presentations at Russian and international conferences on environmental safety, sustainable development of universities, geoecology, environmental education. Co-author of the textbooks “Rationing and Reducing Environmental Pollution”, “Environmental Monitoring”, “Environmental Management”, used in more than 100 universities in Russia. Co-author of massive open online courses “Environmental norms and regulations for the sustainability”, “Management of Energy Resources”. Editor-in-chief of the journal “Bulletin of the Peoples’ Friendship University of Russia. Ecology and life safety”.

Head of the RUDN University participation as the national coordinator of the global university network UI Green Metric World University Rankings Network.

A participant in projects to assess the environmental impacts of oil and gas companies, remediation of oil-contaminated territories, environmental education, assessing the effectiveness of the work of environmental specialists of enterprises.