RUDN university

AGRARIAN AND TECHNOLOGICAL INSTITUTE

DEVELOPMENT OF ADAPTIVE-LANDSCAPE SYSTEMS OF AGRICULTURE AND HIGH TECHNOLOGY AGROTECHNOLOGIES

MASTER'S DEGREE PROGRAMME

ADVANCES OF THE PROGRAM

- An in-depth study of digital programs with implementation of knowledge of soils, plants and modern technology, which allows masters to participate in the development of specific manufacturing innovation projects for large agricultural holdings.
- An optimal solution to adaptive intensification and greening is achieved in adaptive landscape farming systems, which replace zonal systems.
- High saturation of the course with practical laboratory work with specialized computer programs.
- Informal active discussion at seminars of the most attractive innovative technologies, recognizable problem situations at real facilities, actual problems of agricultural production development in regions and farms.
- The listeners form a basic knowledge of the structural and functional organization of the agrolandscape, basic conditions and criteria for the stable functioning of agroecosystems.
- An opportunity to participate in the student exchange programs with partner universities.

STUDYING PROCCESS

120 credits.
Lectures, practical exercises and independent workdesign research practice

SOIL CLASSIFICATION AND AGROECOLOGICAL TYPOLOGY OF LAND

- Historical experience in soil classification.
- Modern classifications of soils in Russia and other countries.
- Projects of a new classification of soils in Russia.
- Typology and classification of land.
- Development of land valuation for agricultural purposes.
- Agroecological typification of lands.
- Natural-agricultural zoning of Russia as a basis for the formation of zonal-provincial agricultural complexes.

AGROECOLOGICAL ASSESSMENT OF LAND

- Landscape-ecological analysis of the territory.
- Agroecological assessment of soils.
- Creation of cartograms of the agrophysical state of soils and interpretation of the results in geographic information systems.
- Assessment of the chemical and physico-chemical properties of soils, availability of elements in the soil for mineral nutrition; nutrient and biological activity of the soil.
- Optimal models of zonal soils that meet the requirements of intensive technologies.
- Assessment of degraded land and soil reclamation assessment.

GIS TECHNOLOGIES FOR LAND VALUATION

- Implementation of GIS in soil landscape mapping.
- Reation of digital elevation models. Digital elevation models.

- Basic concepts. Ways to create. Digitization of contour lines.
- Preparing a raster for vectoring contour lines. Filtering level.
- Heights recording in semantics and transformation to the metric.
- DEM (Digital Elevation Model) creation.

SOIL AND LANDSCAPE CARTOGRAPHY

- Theoretical basis of soil mapping.
- Remote methods in cartography of soils.
- Methodology of soil-landscape mapping.
- Technique for creating soil-landscape maps in the environment of geographic information systems.
- Topographic base processing.
- Creation of an electronic map of forms and relief elements.
- Creation of an electronic map of soil cover structures.
- Creation of electronic slope distribution maps by forms, expositions and slopes.

LANDSCAPE PLANNING AND AGROLANDSCAPES DESIGN

- Principles and procedure for designing agrolandscapes.
- Design of land reclamation measures in adaptive landscape farming systems.
- Design features of ALA (Adaptive Landscape Agriculture) for lands of various agroecological groups in the zonal and provincial aspects.
- Technical, economic, information support of agricultural design.
- Design features of ALA for lands of various agroecological groups in the zonal and provincial aspects.
- Technical, economic and information support of agricultural design.

DESIGNING HIGH AGROTECHNOLOGIES IN AGROLANDSCAPES

- Agroecological assessment of crops.
- Basic design of agricultural technologies in GIS.
- Management of agricultural production processes and agrocenoses.
- Features of cultivation technologies of the main field crops.
- Quality control of crop production, organizational and technical support of agricultural technologies.

AGROTECHNOLOGY SOFTWARE AND INFORMATION SUPPORT

- Setting up the program “Panorama AGRO”.
- Working with source data. Field monitoring.
- Planning the structure of sown areas.
- Creation of basic technological maps for cultures.
- Creation and editing of technological maps for production sites.
- Generating reports on routings and their printing.
- Formation of technological maps.

PROGRAM MANAGER

VALENTIN VALENTINOVICH VVEDENSKY

Candidate of Agricultural Sciences,
Associate Professor
of the Agrobiotechnological Department
of the Agrarian and Technological Institute.

FIELDS OF SCIENTIFIC INTERESTS:

precision farming, agricultural insurance,
modern educational methods.

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