Federal State Autonomous Educational Institution of higher education "Peoples' friendship university of Russia»

Agrarian and technological institute

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Specialization: "Management and design of urban green infrastructure"

Name of the discipline	**Data analysis and statistics**
Volume discipline	**8 ECTS (288 hours.)**
Course Description	
The name of the partition (the) discipline	**Summary of sections (the) discipline**
Methodology of scientific research	Stages of science development. Evolutionary and revolutionary models of science development. Scientific observation Experiment
Collecting and organization of research data	Measuring scales: ordinal, integral and ratio scales. Ordinal, quantitative and qualitative features Continuous and discrete variables Average of distribution. Features of average. Sample. Representativeness of sample
Introduction into descriptive statistics	Mean, mode, median Range, variance, coefficient of variance, stand deviation Scatter plot Box plot
Statistical hypothesis	Confident interval. P-level. Null and alternative hypothesis, step-by-step solutions. Estimation of confident interval.
T-test	One-sample T test Paired T-test Independent two-sample T-test Critical values for t-distribution
Correlation	Correlation Pearson correlation coefficients Spearmen correlation coefficients
Simple linear regression	Relationships between variables Residuals Regression equations, regression coefficients
Multiple regression	-Fitting regression models - Determination coefficient - Power and accuracy of regression models

Developers:

Associate professor of the Department
of landscape architecture and sustainable ecosystem — V. I. Vasenev

Director of the Department
of landscape architecture and sustainable ecosystem — E.A. Dovletyarova

Federal State Autonomous Educational Institution of higher education "Peoples' friendship university of Russia»

Agrarian and technological institute

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Specialization: "Management and design of urban green infrastructure"

Name of discipline	**International regulation in city planning and environmental protection**
The volume of discipline	**6 ECTS (216 hours.)**
Course Description	
Name of sections (themes) of the discipline	**Summary of sections (themes) of the discipline:**
Introduction to the course. Basic terms: city-planning, urbanizations, urban ecosystems, environmental protection. History and actuality of the problem	City-planning and environmental protection as global and national trends. Connections of environmental issues with other areas in the development of cities Modern and ancient cities. Urbanization as a processes of city expansion and urban development Nature urbanization as transformation of natural landscapes into urban infrastructure Functional and formal approaches to define the term «city»
Participation of international organizations in city-planning and environmental protection. International legal framework	Main conventions, protocols, documents, agreements. International organizations in city-planning and environmental protection: possible projects to increase the value of international organizations.
Structure of regulation of city-planning (national, regional, municipal) in Russia	Current realities and trends in the development of socio-economic processes of urbanization; Opportunities, resources and limitations of urban development proper as a form of technical support for urbanization processes; Problems and perspectives of housing and communal services and the construction complex, directly related to urban development in the processes of horizontal technological cooperation.
City-planning in EU: goals, problems and principles of policy	Urban development; Urban dimension of cohesion policy; What is integrated sustainable urban development?; Objectives for 2014-2020; The Urban Agenda for the EU; Regional Policy
Environmental protection in Russia: goals, problems and principles of policy	Wildlife Deforestation and Logging Energy Nuclear energy Pollution Water pollution Air pollution Other forms of pollution Soil erosion

	- State initiatives on increasing policy.
Environmental protection in EU: goals, problems and principles of policy	Environmental law; Green policy: Safeguarding the health and wellbeing of people living in the EU; Global challenges;
International cooperation of Russia and EU in city-planning and environmental protection	Forms of international cooperation in the field of city-planning and environmental protection are: - international organizations for the protection of nature; - international treaties, agreements, conventions; - State initiatives on international cooperation.
Global risks in city-planning and environmental protection.	Disaster risk reduction. Possible ways to avoid the risks.

Developers:

Senior Lecturer, Agrarian and technological institute — M. De Martino

Director of the Department
of landscape architecture and sustainable ecosystem — E.A. Dovletyarova

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Agrarian and technological institute

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Specialization: "Management and design of urban green infrastructure"

Name of the discipline	**Urban ecology**
Volume discipline	**6 ECTS (216 hours.)**
Course Description	
The name of the partition discipline	**Summary of sections discipline:**
Urbanization. Urban ecosystems. Urban landscape	– Urban ecology – ecology of a city – A city as an object of urban ecology – Cities of past and present – Urbanization processes – Models of spatial organization in settlements
Urban geology	– Anthropogenic effects on the lithosphere – Chemical pollution of sediments – Industrial and domestic wastes – Waste classification and management
Urban hydrology	– Anthropogenic effects on hydrosphere – Physical influence of water bodies – Main pollution sources – Contamination with heavy metals and oil products – Salinization,
Urban atmosphere	– Air quality management – Air quality standards – Standards of human influence on atmosphere – Threshold limit values
Urban climate.	– Heat island effect – Urban canyon effect – Urban vicroclimate
Urban green infrastructure	– Anthropogenic influence on biosphere – Technogenic influence on urban vegetation – Alteration of environmental factors, influencing urban vegetation – Regulations to create and maintain green areas
Urban soils	– Антропогенное воздействие на – Anthropogenic influence on soils – Soil contaminants – Threshold limit values in soils – Urban soils (SUITMAs)

Developers:

Associate professor of the Department of landscape architecture and sustainable ecosystem — V. I. Vasenev

Director of the Department of landscape architecture and sustainable ecosystem — E.A. Dovletyarova

Federal State Autonomous Educational Institution of higher education "Peoples' friendship university of Russia»

Agrarian and technological institute

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Specialization: "Management and design of urban green infrastructure"

Name of the discipline	**Landscape design, architecture and urban planning**
Volume discipline	**WE 8 (288 hours)**
Course Description	
The name of the partition (the) discipline	**Summary of sections (the) discipline**
Energy and resource saving technologies in the SPLA. Ecological houses	Each period has its own requirements for housing and urban space. But houses are built per operation for decades or centuries. Therefore, during their construction, it is desirable to take into account not only modern criteria and assessments, but also the requirements of the forecasted future. Therefore, one of the tasks of modern landscape architecture is the creation of comfortable and sustainable spaces using the most modern technologies in the field of energy and resource saving.
European eco-villages. Architectural and landscape environment	European eco-villages are residential development, designed and implemented “with consideration of future needs”, aimed at restoring natural resources, using environmentally friendly technologies in everyday life, giving the natural environment more than taking. Since the 60s of the last century, such a concept has been developed in European countries, and from the 90s began the gradual application of this practice in Russia.
Surface design	A “tablet” use a set of the latest technological solutions “in the language” of modern landscape design, so that a fragment of the architectural environment will find its identity (recognition). Depending on the location of the selected tablet fragment in relation to other components of the landscape, first of all, depending on the flow of moving pedestrians falling on this fragment of the urban space or their placement for the purpose of short-term recreation, the decision is made to use certain modern techniques in surface treatment.
Green design	In addition to decorative enrichment of the environment, vegetation in the city also performs a number of ecological and environment-forming functions. An integral part of modern landscape architecture is the creation of a balance between aesthetics and comfort of movement, this is mainly reflected in the Green and Gray concept, in which the greening of the city has many solutions (roof gardens, modules, vertical gardening, etc.)
Water design	As well as vegetation, water performs important environment-forming functions, especially in the hot summer period. The use of plastic properties of water when creating water devices in urban open spaces is one of the main directions of modern landscape architecture. A design of coastlines and open water is a good solution to the problem of rational use of space.
Light design of urban open spaces	The aesthetics and safety of the urban area in the evening are some of the hallmarks of a modern and sustainable urban environment. Light design currently has many areas, but all of them are united by increasing the comfort and decorative qualities of the territory, as well as the possibility of using light in combination with the other components.
Modern sculpture	Modern sculpture reveals the aesthetic and psychological potential of urban open spaces. The use of the concept of "spirit of the place", as well as modern

	materials and technologies, does not divide space, but creates an interconnection between the natural and artificial components of the landscape.
City for human	The city for a person is based on the formation of values of eco-territory and eco-housing in the system of modern human values. In addition, the city for a person is filled with unique and interesting spaces that create spaces for safe movement and recreation, including psychological, for residents.

Developers:

Senior Lecturer of the Department of landscape architecture and sustainable ecosystem — I.V. Mochalov

Director of the Department of landscape architecture and sustainable ecosystem — E.A. Dovletyarova

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Agrarian and technological institute

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Specialization: "Management and design of urban green infrastructure"

Name of the discipline	**«Phytopathology and Plant Protection»**
Volume discipline	**6 ECTS (216 hour.)**
Course Description	
The name of the partition discipline	**Summary of sections discipline:**
Infectious and non-infectious plant diseases. Main symptoms of plant diseases	The concept of plant disease. Abiotic factors causing noncommunicable diseases. Characteristics of phytopathogens, symptoms.
The main classes of phytopathogens. Features of the life cycle. Diagnostic methods	Viruses, viroids, bacteria, fungi as causative agents of plant diseases. Features of pathogenesis, preservation and spread of infection. Diagnosis of virosis, bacterioses and mycoses
Diseases of ornamental trees, shrubs, lawn grasses, flower crops	Bacterial, fungal and viral diseases. Characteristic symptoms of mycoses, viroses and bacterioses on ornamental cultures
Plant protection methods.	Physical, mechanical and agrotechnical methods of protection. The concept of organic farming
Biological method of protection. Quarantine	Predatory and parasitic invertebrates. Microbiological preparations. Advantages and disadvantages of biomethod
Chemical protection method Integrated Plant Protection	The main classes of pesticides. Fungicides, insecticides and herbicides, mechanism of action. Features of the use of chemical plant protection products

Developers:

Associate Professor
Agrobiotechnology Department — E.N. Pakina

Director of
Agrobiotechnology Department — E.N. Pakina

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Discipline is presented in the basic educational program for GEF-III, developed with accordance with the OS IN PFUR, and is recommended for the preparation of master

Name of the discipline	**Introduction in scientific research**
Volume discipline	**6 ECTS (216hours)**
Course Description	
The name of the partition (the) discipline	**Summary of sections (the) discipline**
Scientific world view	The concept of a world view. Myths as historical methods of explaining natural phenomena. Problems of the formation of European science. Socio-historical background of science. Attempts to define science. The main historical stages of the development of science: antiquity, the Middle Ages, the Renaissance. Galileo Galilei and the foundations of physics. Isaac Newton and classical mechanics. Towards a non-classical world view. Einstein's theory of relativity. Post-non-classical science: non-stationarity of the universe, synergetics, noosphere. Science as a social institution.
Scientific development	Cumulative and conventional models of scientific development. Scientific revolutions and the revolutionary model of the development of science. Model of science evolution and scientific paradigms. Scientific research as a way to obtain information about the environment. Principles for the organization of scientific research. The object and subject of scientific research. Factors affecting the scientific research. Types of research.
Methodology of scientific research	Observation as a type of research work. Principles of observation. Selection and justification of the choice of objects of observation. Selection and justification of the choice of the number of objects observation. Instant, periodic and long-term observation. Interpretation and analysis of observation results. Up-to0-date methods of observation: scanning, remote sensing. Examples of scientific observations from recent environemtnal research: observation of greenhouse gas emissions; observation of the generative structure of the population, observation of the dynamics of habitats of rare species, etc.

Experimental set-up	Experiment as a type of research work. Principles of the experiment. The goals and objectives of the experiment.
Data sampling	Sample. Representativeness of the sample. Randomization. Ways to obtain a representative sample. Mechanical selection. Tables of random numbers. Random number generator. Layer selection
Basic statistics	Grouping and distribution series. Grouping of quality and ordinal features. Classes of quantitative traits. Intervals
Introduction to data analysis	Regression. Regression equation. Regression analysis. Linear and nonlinear regression. Elementary model of linear regression. Model results and remainder. Regression coefficients.
Basic skills in scientific writing	Publication as a way of writing scientific information. Motivations in the preparation of scientific publications. The interests of the author and reader of scientific publications are the similarities and differences. Types of publications, structure of publications.

Developers:

Associate professor of the Department of landscape architecture and sustainable ecosystem — V. I. Vasenev

Director of the Department of landscape architecture and sustainable ecosystem — E.A. Dovletyarova

SUMMARY academic disciplines

Educational program

35.04.09 "Landscape architecture"

Discipline is presented in the basic educational program for GEF-III, developed with accordance with the OS IN PFUR, and is recommended for the preparation of master

Name of the discipline	**Scientific Writing Skills**
Volume discipline	**6 ECTS (216 hours)**
Course Description	
The name of the partition (the) discipline	**Summary of sections (the) discipline**
Introduction to scientific methodology	Model of science evolution and scientific paradigms. Scientific research as a way to obtain information about the environment. Principles for the organization of scientific research. Object and subject of scientific research
Types of scientific work	Observation as a type of research work. Principles of observation. Selection and justification of the choice of objects of observation. Selection and justification of the choice of the number of objects observation. Instant, periodic and long-term observation. Interpretation and analysis of observation results.
Writing a professional CV	The structure of a professional CV: education, knowledge and skills, speaking at conferences, publications, experience of participation in scientific grants. Strengths and weaknesses in CV preparation. CV presentation.
Introduction to scientific reading and scientific metrics	Sources of scientific literature. Search engines. Electronic Libraries. Referential databases. Types of scientific journals. Scientometric indices. Impact factor.
Data sampling	Sample. Representativeness of the sample. Randomization. Ways to obtain a representative sample. Mechanical selection. Tables of random numbers. Random number generator. Layer selection
Preparation materials for conferences	Types of conferences. Conference proceedings. Theses Poster report. Presentation.
Scientific writing skills	Publication as a way of writing scientific information. Motivations in the preparation of scientific publications. The interests of the author and reader of scientific publications are the similarities and differences. Types of written scientific works: Structure of written scientific work.
Scientific fund rising	Science funds. Investment. Commercialization of scientific and technical results in the Russian Federation, CIS countries, EU countries, the USA. Research funds.

Scientific fund rising	Science funds. Investment. Commercialization of scientific and technical results in the Russian Federation, CIS countries, EU countries, the USA. Research funds. Grant Application Procedure

Associate professor of the Department of landscape architecture and sustainable ecosystem — V. I. Vasenev

Director of the Department of landscape architecture and sustainable ecosystem — E.A. Dovletyarova

SUMMARY ACADEMIC DISCIPLINES

35.04.09 «Landscape architecture»

Name of the discipline	Foreign Language (Business English)
Volume of discipline	6 ECTS (216 hours)
Course Description	
The name of the partition (the) discipline	**Summary of sections (the) discipline**
Landscape design in urban environment	Specifics of landscape design in urban environment and ecological sustainability. Review of business literature on the subject
Pre-project analysis	Pre-project analysis: environmental and anthropogenic factors.
Functional zones in urban areas	International projects. Functional zoning plan. Planning roads and paths network.
Architectural forms in urban landscape planning	Planning of small architectural forms and water bodies. Review of business literature on the subject
Composition	Composition plan. Planning view points.
Ornamnetal plants for urban landscaping I (trees and shrubs)	Selecting trees and shrubs for urban landscaping. Plantation plan.
Ornamnetal plants for urban landscaping II (green infrastructure)	Implementing green infrastructure in urban landscaping. Dendroplan. International projects.
Financial planning	Estimating landscape projects. Making an estimate.
Maintaining urban greenery	Problems and solutions to maintain urban greenery. Maintainance plan.

Developer:
Senior Lecturer at the Department
of Foreign Languages of ATI, Ph.D. A.R. Bekeeva

Head of the Department of Foreign
Languages of ATI, Ph.D., Professor E.A. Notina

SUMMARY ACADEMIC DISCIPLINES

35.04.09 «Landscape architecture»

Name of the discipline	Foreign Language (Technical English)
Volume of discipline	6 ECTS (216 hours)
Course Description	
The name of the partition (the) discipline	**Summary of sections (the) discipline**
Landscape design in urban environment	Specifics of landscape design in urban environment and ecological sustainability. Technical literature on the topic.
Pre-project analysis	Pre-project analysis: environmental and anthropogenic factors.
Functional zones in urban areas	Functional zoning plan. Planning roads and paths network. Technical literature on the topic.
Architectural forms in urban landscape planning	Planning of small architectural forms and water bodies.
Composition	Composition plan. Planning view points. Technical literature on the topic
Ornamnetal plants for urban landscaping I (trees and shrubs)	Selecting trees and shrubs for urban landscaping. Plantation plan.
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Developer:
Senior Lecturer at the Department of Foreign Languages of ATI, Ph.D. A.R. Bekeeva

Head of the Department of Foreign Languages of ATI, Ph.D., Professor E.A. Notina