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**Federal State Autonomous Educational Institution
of Higher Education "Peoples' Friendship University of Russia"**

Agrarian and Technological Institute

(name of the main educational unit-developer of the EP HE)

PROGRAM OF THE DISCIPLINE

Landscape planning and sustainable development

(name of the discipline/module)

Recommended by the ISSN for the direction of training/specialty:

35.04.09 Landscape architecture

Management and design of urban green infrastructure

(code and name of the direction of training/specialty)

The development of the discipline is carried out within the framework of the implementation of the main professional educational program of higher education:

Landscape architecture

(name (profile/specialization) of the EP HE)

2022 г.

1. THE AIM OF MASTERING THE DISCIPLINE

The aim of discipline «Landscape planning and sustainable development» is providing basic knowledge of the landscape structure and functioning, ecosystem functions and services related to human well-being, as well as methods of socio-environmental landscape planning.

2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

The development of the discipline "Landscape planning and sustainable development" is aimed at the formation of the following competencies among students:

Table 2.1. List of competencies formed by students during the development of the discipline (results of the development of the discipline)

Code	Competency	Indicators of competence achievement (within the framework of this discipline)
UC-1	Student is able to search, critically analyze problem situations based on a systematic approach, and develop a strategy for action	UC1.1 student is able to apply systematization to solve tasks; UC-1.2 Student is able to search and analyze information;
UC-2	Student is able to manage a project through all stages of its life cycle	UC-3.1 Student is able to lead the project through all stages; UC-3.2 student is able to draw up a project plan and analysis at all stages;
UC -3	Student is able to organize and manage the work of the team, developing a team strategy to achieve the goal	UC-3.1 Student is able to organize team work on the project; UC-3.2 student is able to interact with the executive authorities to coordinate all stages of design;
UC -4	Student is able to apply modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction	UC4.1 Student is able to prepare all the necessary documentation for the project in Russian and a foreign language; UC-4.2 Student is able to communicate on the project in Russian and a foreign language;
UC-5	Student is able to analyze and take into account the diversity of cultures in the process of intercultural interaction	UC-5.1 Student is able to understand the peculiarities of the social organization of society, the specifics of the mentality and worldview of the cultures of the West and East; UC-5.2 Student is able to overcome the cultural barrier, perceiving cross-cultural differences;
UC-6	Student is able to determine and implement the priorities of his own activities and ways to improve it based on self-assessment	UC-6.1 "Student is able to plan his life activities for the period of study in an educational organization"; UC6.2 Student is able to determine the tasks of self-development and professional growth, distribute them for long-medium- and short-term with justification of their relevance and determination of the necessary resources;
GPC-1	Student is able to analyze modern problems at the factory and production,	GPC-1.1 Student is capable of solving complex (non-standard) tasks in

	solve complex (non-standard) tasks in professional activity;	professional activity; GPC-1.2 Student is able to analyze the current problems of the leg and production;
GPC-2	Student is able to transfer professional knowledge using modern pedagogical techniques;	GPC-2.1 Student is able to transfer professional knowledge; GPC-2.2 Student is able to transfer professional knowledge using information technology;
GPC-3	Student is able to develop and implement new effective technologies in professional activities;	GPC-3.1 Student is able to implement new effective technologies in professional activity; GPC-3.2 Student is able to develop new effective technologies in professional activity;
GPC-4	Student is able to conduct scientific research, analyze the results and prepare accounting documents;	GPC-4.1 Student is able to conduct scientific research; GPC-4.2 Student is able to prepare accounting documentation;
GPC-5	Student is able to carry out a feasibility study of projects in professional activity;	GPC-5.1 Student is capable of carrying out economic justification of projects; GPC-5.2 Student is able to carry out a feasibility study of projects;
GPC-6	Student is able to manage teams and organize production processes.	GPC-6.1 Ability to organize production processes; GPC-6.2 Ability to manage a team;
PC-1	The ability to design engineering processes for site preparation, construction and maintenance of landscape architecture facilities	PC-1.1 Student is able to manage the construction and maintenance of landscape architecture facilities; PC-1.2 Student is able to design technological processes for the engineering preparation of the area;
PC-4	The ability to implement measures for the external improvement and landscaping of areas to create favorable sanitary and hygienic conditions, increase the level of human comfort in the urban environment, its general aesthetic enrichment	PC-4.1 Capable of assessing the environmental condition of a project site PC-4.2 Able to create a sustainable development project for the area
PC-5	The ability to develop and implement a system of conservation measures to ensure every citizen's right to a favorable environment	PC-5.1 Able to make decisions on carrying out activities to preserve green spaces in the city PC-5.2 Able to analyze the condition of tree plantations
PC-9	The ability to organize and conduct all kinds of work on the objects of landscape architecture	PC-9.1 Able to find performers for the project PC-9.2 Able to organize the work of the team
PC-10	The readiness to manage the objects of landscape architecture in the field of their functional use, protection and conservation	PC-10.1 Ability to manage the objects of landscape architecture in the field of conservation and protection PC-10.2 Ability to manage objects of landscape architecture
PC-16	The readiness to acquire new knowledge and conduct applied	PC-16.1 Able to acquire new knowledge PC-16.2 Able to conduct applied research

	research in the field of landscape architecture	
PC-21	The ability to carry out the planning organization of open spaces, design the outside environment, design objects of landscape architecture, develop projects of restoration and reconstruction of territories of cultural heritage	PC-21.1 Able to develop a planning solution for the development of the area PC-21.2 Able to develop a project for the restoration and reconstruction of the area
PC-22	Readiness to develop (based on current standards) methodological and regulatory documents for the design of landscape architecture objects	PC-24.1 Is able to prepare a report on the conduct of EES; PC-24.2 is able to conduct environmental surveys;
UC-7.1	Student is able to search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems;	UC-7.1.1 Student is able to apply algorithms to effectively evaluate the data obtained to solve the tasks; UC-7.1.2 Student is able to use open and closed sources of information for data collection and analysis;
UC-7.2	Student is able to evaluate information, its reliability, and build logical conclusions based on incoming information and data.	UC-7.2.1 Student is able to verify the accuracy of the information received; UC-7.2.2 Student is able to logically assess the reliability of the information received.

3. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE EP HE

The discipline "**Landscape planning and sustainable development**" belongs to the basic part of the block B1 of the EP HE.

Within the framework of the educational program, students also master other disciplines and/or practices that contribute to achieving the planned results of mastering the discipline «**Landscape planning and sustainable development**».

Table 3.1. The list of the components of the educational program that contribute to the achievement of the planned results of the development of the discipline

Code	Competency	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
UC-1	Student is able to search, critically analyze problem situations based on a systematic approach, and develop a strategy for action		International regulation in city planning and environmental protection Scientific writing skills
UC-2	Student is able to manage a project through all stages of its life cycle		
UC-3	Student is able to organize and manage the work of the team,		International regulation in city planning and environmental protection

	developing a team strategy to achieve the goal		Scientific writing skills
UC-4	Student is able to apply modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction		International regulation in city planning and environmental protection
UC-5	Student is able to analyze and take into account the diversity of cultures in the process of intercultural interaction		International regulation in city planning and environmental protection Scientific writing skills
UC-6	Student is able to determine and implement the priorities of his own activities and ways to improve it based on self-assessment		International regulation in city planning and environmental protection Scientific writing skills
GPC-1	Student is able to analyze modern problems at the factory and production, solve complex (non-standard) tasks in professional activity;		International regulation in city planning and environmental protection Scientific writing skills
GPC-2	Student is able to transfer professional knowledge using modern pedagogical techniques;		International regulation in city planning and environmental protection Scientific writing skills
GPC-3	Student is able to develop and implement new effective technologies in professional activities;		International regulation in city planning and environmental protection Scientific writing skills
GPC-4	Student is able to conduct scientific research, analyze the results and prepare accounting documents;		International regulation in city planning and environmental protection Scientific writing skills
GPC-5	Student is able to carry out a feasibility study of projects in professional activity;		International regulation in city planning and environmental protection Scientific writing skills
GPC-6	Student is able to manage teams and organize production processes.		International regulation in city planning and environmental protection Scientific writing skills

PC-1	The ability to design engineering processes for site preparation, construction and maintenance of landscape architecture facilities		
PC-4	The ability to implement measures for the external improvement and landscaping of areas to create favorable sanitary and hygienic conditions, increase the level of human comfort in the urban environment, its general aesthetic enrichment		
PC-5	The ability to develop and implement a system of conservation measures to ensure every citizen's right to a favorable environment		
PC-9	The ability to organize and conduct all kinds of work on the objects of landscape architecture		
PC-10	The readiness to manage the objects of landscape architecture in the field of their functional use, protection and conservation		
PC-16	The readiness to acquire new knowledge and conduct applied research in the field of landscape architecture		
PC-21	The ability to carry out the planning organization of open spaces, design the outside environment, design objects of landscape architecture, develop projects of restoration and reconstruction of territories of cultural heritage		

PC-22	Readiness to develop (based on current standards) methodological and regulatory documents for the design of landscape architecture objects		
UC-7.1	Student is able to search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems;		International regulation in city planning and environmental protection
UC-7.2	Student is able to evaluate information, its reliability, and build logical conclusions based on incoming information and data.		International regulation in city planning and environmental protection

* - filled in in accordance with the matrix of competencies and SC EP HE

4. SCOPE OF DISCIPLINE AND TYPES OF ACADEMIC WORK

The total labor intensity of the discipline "Landscape planning and sustainable development" is 13 credits.

Table 4.1. Types of educational work by periods of mastering the OP in for **FULL-time** education

Type of educational work		TOTAL, ac.h	Semesters			
			1	2	3	
<i>Contact work, ac.h</i>		94	34	26	34	
Including:						
Lectures (LC)		42	17		17	
Laboratory works (LW)		42		26	17	
Practical/seminar classes (SC)		17	17			
<i>Independent work of students, ac.h</i>		282	86	94	102	
<i>Control (exam/test with assessment), ac.h</i>		92	24	24	44	
Total labor intensity of the discipline		468	144	144	180	
	Ac. hours					
	Credits	13	4	4	5	

5. CONTENT OF THE DISCIPLINE

Table 5.1. The content of the discipline (module) by type of academic work

Name of the discipline section	Content of the section (topics)	Type of educational work*
<u>PART 1. What to plan</u> Section 1. Intro	1.1. Earth System Science and Land System science 1.2. Landscape as a socio-ecological system: European Landscape convention and other international agreements in landscape planning 1.3. "What is landscape?" discussion: history of landscape theory	LC, SC
Section 2. Natural landscape structure and processes	1.1. Natural landscape structure (components and morphology) 1.2. Geomorphology: basic principles for landscape differentiation and spatial planning 1.3. Geomorphology and geohazards in different environments: mountains, highlands and lowlands, seashores 1.4. Landscape water and microclimate: energy and water balance 1.5. Vegetation and Soil formation processes in Landscape 1.6. Land cover and Land use mapping	LC, SC
Section 3. Man and Nature	1.1. Man and Nature: Anthornes theory 1.2. Land change detection with RS 1.3. Landscape archaeology and Environmental history 1.4. Historical landscape mapping 1.5. Land System Functioning: drivers, factors, actors 1.6. Cultural landscape and landscape in culture 1.7. Landscape planning and architecture	LC, SC
<u>PART 2. How to plan</u> Section 1. Intro	1.1. Sustainable development and natural resource management 1.2. "Why to plan the land" discussion: regional approaches to land planning 1.3. Urban-rural interaction 1.4. Urban-rural gradient mapping with RS	LW
Section 2. Ecosystem services theory	1.1. Ecosystem services approach: Contribution of nature to human well-being 1.2. ES studies review 1.3. Ecosystem services categories (different classifications: MEA, CICES, NCP) 1.4. Valuing ecosystem services (brief into different methods such as economics, modelling, biophysical assessments)	LW
Section 3. Ecosystem services in practice	1.1. Ecosystem services mapping and modelling in urban planning 1.2. ES and Land use (forestry and agriculture) 1.3. ES and nature conservation (trade-off and synergy) 1.4. Science-policy interface 1.5. Stakeholder engagement & participatory planning	LW
<u>PART 3. With and for whom to plan</u> Section 1. Intro	1.1. Green Cities: Concepts Overview and Cases 1.2. Green Cities Concepts: Sustainability and Challenges 1.3. Socio-economic Aspects of Cities: Demography and Migration, Economic factors and Social Services	LC, LW

Section 2. Territory analysis	1.1. Analyzing socio-economic situation of the city 1.2. Urban territory analysis: research goals, data sources, spatial analysis methods 1.3. Analyzing urban territories and creating a database for design 1.4. Green areas (infrastructure) as urban social spaces 1.5. Discussing and challenging the green city as a just city 1.6. Cultural ecosystem services of urban green infrastructure	LC, LW
Section 3. Social studies	1.1. Urban Social studies: quantitative methods 1.2. Designing a sociological survey of urban green infrastructure 1.3. Urban Social studies: qualitative methods 1.4. Designing a qualitative study of urban green infrastructure 1.5. Participatory approach in urban planning and development: types and formats of participatory practices 1.6. Participatory Design: Theory and Practice 1.7. Developing participatory and socio-cultural design sessions	LC, LW

* - it is filled in only by **FULL-time** education: LC – lectures; LW – laboratory work; SC - seminars.

6. MATERIAL AND TECHNICAL SUPPORT OF THE DISCIPLINE

Table 6.1. Material and technical support of the discipline

Audience type	Equipping the audience	Specialized educational/laboratory equipment, software and materials for the development of the discipline (if necessary)
Specialized audience	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment. (audiences 203, 418)	Draper Diplomat 213x213 83” tripod screen, a workstation based on a complete system unit and a monitor for working with graphical applications. Model AG_PC Axiom Group/Intel Core I3 Processor 8 Cooperative memory Crucial by Micron DDR4 8SV*2;Motherboard PRIME B360-PLUS;MoHHTop Samsung 23.5, Software ArchiCAD 15, AutoCAD12, SketchUp, QGIS 2.10 (Quantum GIS)
For independent work of students	An auditorium for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment. (audiences 203, 418)	Draper Diplomat 213x213 83” tripod screen, a workstation based on a complete system unit and a monitor for working with graphical applications. Model AG_PC Axiom Group/Intel Core I3 Processor 8 Cooperative memory Crucial by Micron DDR4 8SV*2;Motherboard PRIME B360-PLUS;MoHHTop Samsung 23.5,

Audience type	Equipping the audience	Specialized educational/laboratory equipment, software and materials for the development of the discipline (if necessary)
		Software ArchiCAD 15, AutoCAD12, SketchUp, QGIS 2.10 (Quantum GIS)

* - the audience for independent work of students is called **MANDATORY!**

7. EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

Basic literature:

Printed publications:

1. Haaren, Christina von, Andrew A Lovett, и Christian Albert. Landscape Planning with Ecosystem Services: Theories and Methods for Application in Europe, 2019. <https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=5925011>.
2. Turner, Monica G., и Robert H. Gardner. Landscape Ecology in Theory and Practice. New York, NY: Springer New York, 2015. <http://link.springer.com/10.1007/978-1-4939-2794-4>.
3. Martini, I. Peter, и Ward Chesworth, ред. Landscapes and Societies. Dordrecht: Springer Netherlands, 2011. <http://link.springer.com/10.1007/978-90-481-9413-1>.

Electronic and printed full-text materials:

4. Directorate General for the Environment. Mapping and Assessment of Ecosystems and Their Services: An Analytical Framework for Mapping and Assessment of Ecosystem Condition in EU: Discussion Paper. LU: Publications Office, 2018. <https://data.europa.eu/doi/10.2779/055584>.
5. Elmquist, Thomas, Michail Fragkias, Julie Goodness, Burak Güneralp, Peter J. Marcotullio, Robert I. McDonald, Susan Parnell, и др., ред. Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities. Dordrecht: Springer Netherlands, 2013. <https://doi.org/10.1007/978-94-007-7088-1>.

Additional literature:

Electronic and printed full-text materials:

1. Biggs, Reinette, Maja Schlüter, и Michael L. Schoon, ред. Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems. Cambridge: Cambridge University Press, 2015.
2. Neugarten, Rachel A., Penny F. Langhammer, Elena Osipova, Kenneth J. Bagstad, Nirmal Bhagabati, Stuart H.M. Butchart, Nigel Dudley, и др. *Tools for Measuring, Modelling, and Valuing Ecosystem Services: Guidance for Key Biodiversity Areas, Natural World Heritage Sites, and Protected Areas*. Под редакцией Craig Groves. 1-е изд. IUCN, International Union for Conservation of Nature, 2018. <https://doi.org/10.2305/IUCN.CH.2018.PAG.28.en>.

E-materials:

Resources of information and telecommunication network "Internet":

1. RUDN e-library:

RUDN electronic library system - RUDN EBS <http://lib.rudn.ru/MegaPro/Web>
University Library Online Libraries <http://www.biblioclub.ru>

Yurite electronic library system <http://www.biblio-online.ru>
Student's Consultant electronic library system www.studentlibrary.ru
Lan LBS <http://e.lanbook.com/> 2.

2. Databases and search engines:

NCBI: <https://p.360pubmed.com/pubmed/>

RUDN Bulletin: access mode from the RUDN territory and remotely
<http://journals.rudn.ru/>

Elibrary.ru scientific library: access via RUDN IP-addresses at:
<http://www.elibrary.ru/defaultx.asp>

ScienceDirect (ESD), FreedomCollection, Cell Press of Elsevier Publishing House.
There is remote access to the database, access via RUDN IP-addresses (or remotely via individual login and password).

Google Scholar is a free search engine for full-text scientific publications of all formats and disciplines. Indexes the full texts of scientific publications. Access mode:
<https://scholar.google.ru/>

Scopus is a scientometric database of Elsevier Publishing House. Access to the platform is via IP-addresses of PFUR or remotely. <http://www.scopus.com/>

Educational and methodological materials for independent work of students during the development of the discipline/ module:*

1. Methodological guidelines for students on the development of the discipline
«**Landscape planning and sustainable development**»

* - all teaching materials for independent work of students are placed in accordance with the current procedure on the discipline page in the **TUIS!**

8. EVALUATION MATERIALS AND A POINT-RATING SYSTEM FOR ASSESSING THE LEVEL OF COMPETENCE FORMATION IN THE DISCIPLINE

Evaluation materials and a point-rating system* for assessing the level of competence formation (part of competencies) based on the results of mastering the discipline "**Landscape planning and sustainable development**" are presented in the Appendix to this Work Program of the discipline.

* - EM and PRS are formed on the basis of the requirements of the relevant local regulatory act of the RUDN.

DEVELOPERS:

Associate Professor of the
Department of Landscape Design
and Sustainable Ecosystems

Position, BTU



Signature

V.I. Vasenev

Name

HEAD OF THE BTU

Director of the Department of
Landscape Design and Sustainable
Ecosystems

Position, BTU



Signature

E.A. Dovletyarova

Name

РУКОВОДИТЕЛЬ ОП ВО:

Director of the Department of
Landscape Design and Sustainable
Ecosystems



E.A. Dovletyarova

Position, BTU

Signature

Name