Federal State Autonomous Educational Institution of Higher Education

PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA NAMED AFTER PATRICE LUMUMBA (RUDN University)

Agrarian and Technological Institute

educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

Landscape planning and sustainable development

course title

Recommended by the Didactic Council for the Education Field of:

35.03.09 Landscape architecture
Management and design of urban green infrastructure

field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

Landscape architecture

higher education programme profile/specialisation title

1. COURSE GOAL(s)

The goal of the course is to provide 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 LEARNING OUTCOMES

The Course implementation is aimed at the development of the following competences (competences in part):

Table 2.1. List of competences that students acquire during the Course

Competence code	**Competence descriptor**	**Competence formation indicators** (within this course)
GC-1	Student is able to search, critically analyze problem situations based on a systematic approach, and develop a strategy for action	GC-1.1 Student is able to apply systematization to solve tasks; GC-1.2 Student is able to search and analyze information;
GC-2	Student is able to manage a project through all stages of its life cycle	GC-3.1 Student is able to lead the project through all stages; GC-3.2 student is able to draw up a project plan and analysis at all stages;
GC -3	Student is able to organize and manage the work of the team, developing a team strategy to achieve the goal	GC-3.1 Student is able to organize team work on the project; GC-3.2 student is able to interact with the executive authorities to coordinate all stages of design;
GC -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	GC4.1 Student is able to prepare all the necessary documentation for the project in Russian and a foreign language; GC-4.2 Student is able to communicate on the project in Russian and a foreign language;
GC-5	Student is able to analyze and take into account the diversity of cultures in the process of intercultural interaction	GC-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; GC-5.2 Student is able to overcome the cultural barrier, perceiving cross-cultural differences;
GC-6	Student is able to determine and implement the priorities of his own activities and ways to improve it based on self-assessment	GC-6.1 Student is able to plan his life activities for the period of study in an educational organization; GC-6.2 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, solve complex	GPC-1.1 Student is capable of solving complex (non-standard) tasks in professional activity; GPC-1.2 Student is able to analyze the current problems of the leg and production;

Competence code	Competence descriptor	Competence formation indicators (within this course)
	(non-standard) tasks in professional activity;	
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 Student is 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 Student is able to make decisions on carrying out activities to preserve green spaces in the city; PC-5.2 Student is 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 Student is able to find performers for the project; PC-9.2 Student is 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.

Competence code	Competence descriptor	Competence formation indicators (within this course)
PC-16	The readiness to acquire new knowledge and conduct applied research in the field of landscape architecture	PC-16.1 Student is able to acquire new knowledge; PC-16.2 Student is able to conduct applied research.
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 Student is able to develop a planning solution for the development of the area; PC-21.2 Student is able to develop a project for the restoration and reconstruction of the area.
PC-22	readiness to participate in the project activities of organizations, to work in a team of specialists associated with the sustainable development of territories at the stage of spatial planning and preparation of master plans of settlements and urban agglomerations	PC-22.1 Student is able to participate in the development of plans for sustainable urban development; PC-22.2 Student is able to participate in project activities;
GC-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;	GC-7.1.1 Student is able to apply algorithms to effectively evaluate the data obtained to solve the tasks; GC-7.1.2 Student is able to use open and closed sources of information for data collection and analysis;
GC-7.2	Student is able to evaluate information, its reliability, and build logical conclusions based on incoming information and data.	GC-7.2.1 Student is able to verify the accuracy of the information received; GC-7.2.2 Student is able to logically assess the reliability of the information received.

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The Course refers to the core component of (B1) block of the higher educational programme curriculum.

Table 3.1. The list of the higher education programme components that contribute to the achievement of the expected learning outcomes as the Course results.

Competence code	Competence descriptor	Previous courses/modules, Courses*	Subsequent courses/modules, Courses*
GC-1	Student is able to search, critically analyze problem situations based on a systematic approach, and develop a strategy for action	Data analysis and statistics, Green infrastructure urban climate and carbon neutrality	
GC-2	Student is able to manage a project through all stages of its life cycle	-	
GC -3	Student is able to organize and manage the work of the team, developing a team strategy to achieve the goal	Data analysis and statistics, Green infrastructure urban climate and carbon neutrality, Urban ecology	
GC -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	Data analysis and statistics, Green infrastructure urban climate and carbon neutrality	
GC-5	Student is able to analyze and take into account the diversity of cultures in the process of intercultural interaction	Data analysis and statistics, Green infrastructure urban climate and carbon neutrality	
GC-6	Student is able to determine and implement the priorities of his own activities and ways to improve it based on self-assessment	Data analysis and statistics, Green infrastructure urban climate and carbon neutrality, Urban ecology	
GPC-1	Student is able to analyze modern problems at the factory and production, solve complex (non-standard) tasks in professional activity;	Data analysis and statistics	
GPC-2	Student is able to transfer professional	Data analysis and statistics, Green	

Competence code	Competence descriptor	Previous courses/modules, Courses*	Subsequent courses/modules, Courses*
	knowledge using modern pedagogical techniques;	infrastructure urban climate and carbon neutrality	
GPC-3	Student is able to develop and implement new effective technologies in professional activities;	Data analysis and statistics, Urban ecology	
GPC-4	Student is able to conduct scientific research, analyze the results and prepare accounting documents;	Data analysis and statistics	
GPC-5	Student is able to carry out a feasibility study of projects in professional activity;	Data analysis and statistics	
GPC-6	Student is able to manage teams and organize production processes.	Data analysis and statistics	
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	Urban ecology	
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	-	

Competence code	Competence descriptor	Previous courses/modules, Courses*	Subsequent courses/modules, Courses*
	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	Green infrastructure urban climate and carbon neutrality	
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 participate in the project activities of organizations, to work in a team of specialists associated with the sustainable development of territories at the stage of spatial planning and preparation of master plans of settlements and urban agglomerations	-	
GC-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	Data analysis and statistics	

Competence code	Competence descriptor	Previous courses/modules, Courses*	Subsequent courses/modules, Courses*
	as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems;		
GC-7.2	Student is able to evaluate information, its reliability, and build logical conclusions based on incoming information and data.	Data analysis and statistics	

* To be filled in according with the competence matrix of the higher education programme.

4. COURSE WORKLOAD

The total workload of the Course is 13 credits (468 academic hours).

5. COURSE CONTENTS

*Table 5.1. Course contents**

Modules	Contents (topics, types of practical activities)	Workload, academic hours
Module 1. What to plan	1.1. Earth System Science and Land System science (lecture) 1.2. Landscape as a socio-ecological system: European Landscape convention and other international agreements in landscape planning (lecture) 1.3. "What is landscape?" discussion: history of landscape theory (seminar)	10
	1.1. Natural landscape structure - components and morphology (lecture) 1.2. Geomorphology: basic principles for landscape differentiation and land forms mapping (seminar) 1.3. Geomorphology and geohazards in different environments: mountains, highlands and lowlands, seashores (lecture) 1.4. Landscape water and microclimate: energy and water balance (seminar) 1.5. Vegetation and Soil formation processes in Landscape (lecture) 1.6. Land cover and Land use mapping (seminar)	13
	1.1. Man and Nature: Anthormes theory (lecture)	13

Modules	Contents (topics, types of practical activities)	Workload, academic hours
	1.2. Land change detection with RS (seminar) 1.3. Landscape archaeology and Environmental history (lecture) 1.4. Historical landscape mapping (seminar) 1.5. Land System Functioning: drivers, factors, actors (lecture) 1.6. Cultural landscape and landscape in culture (lecture) 1.7. Landscape planning and architecture (seminar)	
Module 2. How to plan	1.1. Sustainable development and natural resource management (lecture) 1.2. "Why to plan the land" discussion: regional approaches to land planning (seminar) 1.3. Urban-rural interaction (lecture) 1.4. Urban-rural gradient mapping with RS (seminar)	10
	1.1. Ecosystem services approach: Contribution of nature to human well-being (lecture) 1.2. ES studies review (seminar) 1.3. Ecosystem services categories in different classifications: MEA, CICES, NCP (lecture) 1.4. Valuing ecosystem services: brief into different methods such as economics, modelling, biophysical assessments (lecture)	10
	1.1. Ecosystem services mapping and modelling in urban planning (seminar) 1.2. ES in forestry and agriculture (lecture) 1.3. ES and nature conservation: trade-off and synergy (lecture) 1.4. Science-policy interface (lecture) 1.5. Stakeholder engagement & participatory planning (seminar)	12
Module 3. With and for whom to plan	1.1. Green Cities: Concepts Overview and Cases (lecture) 1.2. Green Cities Concepts: Sustainability and Challenges (seminar) 1.3. Socio-economic Aspects of Cities: Demography and Migration, Economic factors and Social Services (lecture)	10
	1.1. Analyzing socio-economic situation of the city (seminar) 1.2. Urban territory analysis: research goals, data sources, spatial analysis methods (lecture) 1.3. Analyzing urban territories and creating a database for design (seminar)	12

Modules	Contents (topics, types of practical activities)	Workload, academic hours
	1.4. Green areas (infrastructure) as urban social spaces (lecture) 1.5. Discussing and challenging the green city as a just city (seminar) 1.6. Cultural ecosystem services of urban green infrastructure (lecture)	
	1.1. Urban Social studies: quantitative methods (lecture) 1.2. Designing a sociological survey of urban green infrastructure (seminar) 1.3. Urban Social studies: qualitative methods (lecture) 1.4. Designing a qualitative study of urban green infrastructure (seminar) 1.5. Participatory approach in urban planning and development: types and formats of participatory practices (lecture) 1.6. Participatory Design: Theory and Practice (lecture) 1.7. Developing participatory and socio-cultural design sessions (seminar)	13
Independent work of students.		306
Control (exam/test with assessment).		59
	TOTAL:	**432**

* The contents of Course through modules and types of practical activities shall be FULLY reflected in the student's Course report.

6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

The infrastructure and technical support necessary for the course implementation include: certified soil-ecological laboratory, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment. (rooms 203, 418). Specialized educational/laboratory equipment includes 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).

7. RESOURCES RECOMMENDED FOR COURSE

Main readings:

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

Additional readings:

1. 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.
2. 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.
3. 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.
4. Elmqvist, 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.
5. 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

Internet sources

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System (RUDN ELS) http://lib.rudn.ru/MegaPro/Web
- EL "University Library Online" http://www.biblioclub.ru
- EL "Yurayt" http://www.biblio-online.ru
- EL "Student Consultant" www.studentlibrary.ru
- EL "Lan" http://e.lanbook.com/
- EL "Trinity Bridge"

2.*Databases and search engines:*

- electronic foundation of legal and normative-technical documentation http://docs.cntd.ru/
- Yandex search engine https://www.yandex.ru/
- Google search engine https://www.google.ru/
- Scopus abstract database http://www.elsevierscience.ru/products/scopus/

The training toolkit and guidelines for a student to do an Course, keep an Course diary and write an Course report:*

1. Safety regulations to do the Course (safety awareness briefing).
2. Guidelines for keeping an Course diary and writing an Course report.

*The training toolkit and guidelines for the Course are placed on the Course page in the university telecommunication training and information system under the set procedure.

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL AS COURSE RESULTS

The assessment toolkit and the grading system* to evaluate the level of competences (competences in part) formation as the Course results are specified in the Appendix to the Course syllabus.

* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

DEVELOPERS:

Associate Professor, department of landscape planning and sustainable ecosystems		**V. M. Matasov**
position, educational department	signature	name and surname.
Associate Professor, department of landscape planning and sustainable ecosystems		**V. I. Vasenev**
position, educational department	signature	name and surname.

HEAD OF EDUCATIONAL DEPARTMENT:

Director, department of landscape planning and sustainable ecosystems		**E. A. Dovletyarova**
educational department	signature	name and surname.

HEAD OF HIGHER EDUCATION PROGRAMME:

Associate Professor, department of landscape planning and sustainable ecosystems		**V. I. Vasenev**
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