

Документ подписан простой электронной подписью
Информация о владельце:
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Должность: Ректор
Дата подписания: 06.06.2022 14:36:18
Уникальный программный ключ
ca953a0120d891083f939673078ef1a989dae18a

**Federal state autonomous educational institution
higher education
Agrarian Technological Institute**

(The name of the main educational unit (MEU) - the developer of the educational program of higher education)

DISCIPLINE WORK PROGRAM

Urban ecology

(title of a discipline/module)

Recommended by the MSSN for the specialty:

35.04.09 Landscape architecture

Management and design of urban green infrastructure

(code and specialty name)

The study of the discipline is conducted within the framework of the basic professional educational program of higher education (EP HE):

Landscape architecture

(name of a specialization of the educational program)

2022 г.

1. GOAL OF THE DISCIPLINE

The goal of the discipline «Urban ecology» is mastering theoretical backgrounds and obtaining practical skills in analysis of features, factors and functional specifics of urban ecosystems and their components.

2. REQUIREMENTS FOR THE RESULTS OF THE SKILLS ACQUISITION OF THE DISCIPLINE

Learning the discipline «Urban ecology» is aimed at the formation of students of the following competencies:

Table 2.1. The list of competencies formed in the development of the discipline (the results of the discipline)

Code	Competence	Indicators of competence achievement (within the discipline)
UK-3	Able to organize and lead a team, developing a team strategy to achieve the goal.	UK-3.1 Able to organize team work on the project; UK-3.2 Able to interact with the executive authorities to coordinate all stages of the project.
UK-6	Is able to identify and implement the priorities of his/ her own activities and ways to improve them on the basis of self-assessment.	UK-6.1 Able to plan their life activities for the period of study in an educational organization; UK-6.2 Is able to determine the tasks of self-development and professional growth, distribute them into long-term and short-term ones with justification of their relevance and determination of the necessary resources.
OPK-3	Is able to develop and implement new effective technologies in professional activity.	OPK-3.1 Able to implement new effective technologies in professional activities; OPK-3.2 Able to develop new effective technologies in professional activities.
PK-2	Ability to assess the effectiveness of the use of materials, equipment, technological processes in the objects of landscape architecture	PK-2.1 Able to assess the effectiveness of equipment use; PK-2.2 Able to assess the effectiveness of technology and materials
PK-4	Ability to implement measures for the external improvement and landscaping of areas to create favorable sanitary and hygienic conditions, increase the level of comfort of human stay in the urban environment, its overall aesthetic enrichment	PK-4.1 Is able to assess the environmental condition of the design object; PK-4.2 Is able to create a project of sustainable development of the territory.
PK-18	Ability to prepare scientific and technical reports, reviews, publications on the results of research in the field of landscape architecture	PK-18.1 Is able to prepare scientific articles, research reports; PK-18.2 Is able to prepare scientific and technical reports.

3. THE PLACE OF THE DISCIPLINE IN THE STRUCTURE OF THE OP VO

The discipline “**Urban ecology**” refers to the basic part of the block B1 OP VO.

In the frame of the OP VO students also learning other disciplines and/or practices that contribute to the achievement of the planned results of acquiring skills in the discipline “**Urban ecology**”.

Table 3.1. List of components of the OP VO, contributing to the achievement of the planned results of acquiring skills in the discipline

Code	Description of the competence	Previous disciplines / modules, practices*	Subsequent disciplines/modules, practices*
UK-3	Able to organize and lead a team, developing a team strategy to achieve the goal.	Landscape planning and sustainable development Phytopathology and Plant Protection Landscape engineering and nature-based solution Green infrastructure urban climate and carbon neutrality Principles of remote sensing and modeling Advances in environmental monitoring	International regulation in city planning and environmental protection Scientific writing skills
UK-6	Is able to identify and implement the priorities of his/ her own activities and ways to improve them on the basis of self-assessment.	Landscape planning and sustainable development Phytopathology and Plant Protection Landscape engineering and nature-based Green infrastructure urban climate and carbon neutrality Principles of remote sensing and modeling Advances in environmental monitoring Research planning Scientific research	International regulation in city planning and environmental protection Scientific writing skills
OPK-3	Is able to develop and implement new effective technologies in professional activity.	Landscape planning and sustainable development Phytopathology and Plant Protection Landscape engineering and nature-based solution Research planning	Scientific writing skills International regulation in city planning and environmental protection
PK-2	Ability to assess the effectiveness of the use of materials, equipment, technological processes	-	-

	in the objects of landscape architecture		
PK-4	Ability to implement measures for the external improvement and landscaping of areas to create favorable sanitary and hygienic conditions, increase the level of comfort of human stay in the urban environment, its overall aesthetic enrichment	Landscape planning and sustainable development	-
PK-18	Ability to prepare scientific and technical reports, reviews, publications on the results of research in the field of landscape architecture	-	Scientific writing skills Introduction in scientific research

* - * - to be filled in accordance with the competence matrix SUP OP VO

4. COURSE SCOPE AND TYPES OF LEARNING ACTIVITIES

The credits of the “Urban ecology” amount 6 units.

Table 4.1. Types of educational work by periods of full-time study of the program of OP VO

Type of educational work		TOTAL, ac.h.	Semester 3
Classroom work, ac.h.		50	50
Including:			
Lectures (LC)		17	17
Laboratory work (LW)		33	33
Practicice / seminars classes (P/S)			
Individual work of students, ac.h.		116	116
Control (exam / pass with marks), ac.h.		50	50
Total volume of the discipline	ac.h.	216	216
	credits	6	6

5. DISCIPLINE CONTENT

Table 5.1. Content of the discipline (module) by type of educational work (EW)

Sections	Topics	Type of EW
1. Properties and processes of urban ecosystems' components	Introduction in urban ecology	LC
	Urbanization: problems and decisions	LW
	Review of functional zoning of the cities: advantages and disadvantages	LW
	Urban green infrastructure	LC
	Benefits of urban vegetation	LW
	Approaches to evaluation of urban trees state	LW
	Urban soils: variety, properties and functioning	LC
	Assessment of pollution level in the urban soil-vegetation system (LAB1)	LW
		LW
	Control and protection of the surface water quality	LC
	Data analysis and interpretation, presentations of the results (LAB 1)	LW
		LW
	Urban geomorphology	LC
	Review and discussion of cases of natural-based solutions in urban environment	LW
		LW
Urban atmosphere and air quality	LC	
Assessment of pollution level in the atmosphere (analysis of snow samples) (LAB 2)	LW	
	LW	
2. Management practice in urban environment	2.1 Urban metabolism and waste management	LC
	Data analysis and interpretation, presentations of the results (LAB 2)	LW
		LW
	2.2 Urban agriculture and food security	LC
	Urban farming mini-project	LW
Exam and ecological assessment of the territory in urban environment (project)	LC	
	LW	

* - to be filled in only for full-time education: LC - lectures; LW - laboratory work; SR - seminars.

6. MATERIAL AND TECHNICAL SUPPORT OF THE DISCIPLINE

Table 6.1. Material and technical support of the discipline

Type of classroom	Classroom description	Specialized training/laboratory equipment, software and materials for learning the discipline (if necessary)
Classroom for lectures and practice	Rooms for laboratory work, individual consultations, taking exams and tests, equipped with a set of specialized equipments (r. 203, 418)	Draper Diplomat tripod screen 213x213 83", Workstation based on a system unit assembly and a monitor to work with graphics applications. Model AG_PC Axioma Group/Processor Intel Core I3 8 Co-Memory Crucial by Micron DDR4 8CV*2;Motherboard PRIME B360-PLUS;MoHHTop Samsung 23.5, Software ArchiCad 15, AutoCAD12, SketchUp, QGIS 2.10 (Quantum GIS)
Classroom for individual work of students	Room for individual work of students (can be used for laboratory classes and consultations), equipped with a set of specialized equipments (room 203, 418)	Draper Diplomat tripod screen 213x213 83", Workstation based on a system unit assembly and a monitor to work with graphics applications. Model AG_PC Axioma Group/Processor Intel Core I3 8 Co-Memory Crucial by Micron DDR4 8CV*2;Motherboard PRIME B360-PLUS;MoHHTop Samsung 23.5, Software ArchiCad 15, AutoCAD12, SketchUp, QGIS 2.10 (Quantum GIS)

* - the classroom for students' individual work is specified MUST!

7. METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

The main literature:

1. Kurbatova A.S., Bashkin V.N., Kasimov N.S. «Urban ecology». – M.: 2004 – 624 p (in Russian)
2. Denisov V.V., Kurbatova A.S., Denisova I.A., Bondarenko V.L., Gracheva V.A., Gutenev V.V., Nagnibeda B.A. «Ecology of a city». M.: Rostov on Don: 2008-832 p.(in Russian).
3. Alberti M. Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems Springer; 2008 366 p.
4. Marzluff et al (eds) 2008. Urban ecology. Springer. USA.
5. Vasenev V., Epikhina A. Urban ecology. Educational-methodological complex for master students. RUDN University, 2015.

Additional literature:

1. Urban Informatics. Wenzhong Shi, Michael F. Goodchild, Michael Batty, Mei-Po Kwan, Anshu Zhang (Eds.). Springer Singapore, 2021.
2. Forman R. Urban ecology: Science of Cities. 2014.
3. Urban Ecology. Pramit Verma, Pardeep Singh, Rishikesh Singh, A. Raghubanshi (Eds.). 2020

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 students' individual work for acquiring skills discipline/module:*

1. Theoretical and practical information «**Urban ecology**» discipline in the presentations and Educational-methodological complex for master students.

2. Practical tasks

* - all educational and methodical materials for students' individual work are placed in TUIS

8. EVALUATION METHODS AND SCORE-RATING SYSTEM FOR ASSESSING THE LEVEL OF COMPETENCE IN THE DISCIPLINE

Assessment materials (AM) and score-rating system* (SRS) for assessing the level of competence (part of competences) for the "**Urban ecology**" discipline are presented in the Supplementary to this Work program of the discipline.

* - AM and SRS are formed on the basis of the requirements of the corresponding of the regulatory documents of the RUDN University.

DEVELOPERS:

Senior Lecture of the Department of
Landscape Design and Sustainable
Ecosystems

Position



Signature

K.V. Ivashchenko

Name and family name

Associate Professor of the
Department of Landscape Design
and Sustainable Ecosystems

Position



Signature

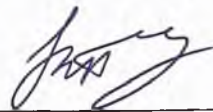
V.I. Vasenev

Name and family name

Director of the Department:

Director of the Department of
Landscape Design and Sustainable
Ecosystems

Position



Signature


E.A. Dovletyarova

Name and family name

Director of the Institute:

Agrarian Technological Institute

Position



Signature

E.A. Dovletyarova

Name and family name