

*Federal State Autonomous Educational Institution of Higher Education
“Russian University of Peoples' Friendship”*

Agrarian Technological Institute

Recommended ISSC

PRACTICE PROGRAM

Practice subject:

Practice in urban ecology

Recommended for the direction of training / specialty:

35.04.09 Landscape architecture

Program orientation (profile):

Management and design of urban green infrastructure

Graduate Qualifications: Master

*(in accordance with the order of the Ministry of Education and Science of the Russian Federation of
12.09.2013 №1061)*

1. **The goal** of the practice for the students following the curriculum “Management and design of urban green infrastructure” is getting practical skills and consolidating knowledge obtained during the course of “Urban ecology”. Study the basic terms, concepts and definitions in the field of city ecology, gain practical skills in the field of environmental assessment and valuation of urban ecosystems and their components.

2. The research tasks are:

- master the basic concepts and principles of ecology of cities and settlements;
- to study environmental factors in an urbanized environment;
- master monitoring systems, such as tracking, forecasting and making operational decisions to improve the quality of the environment;
- to work out the skills of environmental monitoring of the state of the urban environment on the example of assessing the quality of urban soils in Moscow

3. **Place of the discipline in the educational program.**

The practice «Urban ecology» refers to the basic part of block 1 of the curriculum and takes place after semester 2. The practice «Urban ecology» is based on knowledge, skills and competences, obtained when taking the courses in urban ecology, scientific writing skills and data analysis and statistics.

4. **The format of the educational practice** – field, lab and in-class.

5. **Practice duration and venue.**

Educational practice takes place within two weeks. Educational practice takes place on the basis of the laboratory «Smart technologies for sustainable urban development under global changes» and Center of modelling and projecting of sustainable ecosystems of Agrarian-technological institute, RUDN University.

6. **Competencies, formed in result of the practice**

As a result of the training practice, the student should acquire the following practical skills, abilities, universal and professional competencies:

- the ability to assess the impact of measures for the rational use and management of landscapes regarding improving the quality and safety of the human environment (PC-3);
- the ability to implement measures for the external improvement and greening of the territories to create favorable sanitary and hygienic conditions, increase the level of human comfort in the urban environment, its overall aesthetic enrichment (PC-4);
- ability to develop and implement a system of measures for the plant protection to ensure the right of every citizen to a favorable environment (PC-5);
- readiness to organize of urban environmental monitoring and inventory on the objects of landscape architecture, the compilation of the inventory of green space (PC-6);

- the ability to develop scientifically-based technologies for growing planting material: ornamental trees and shrubs, flower crops, lawns, and to carry out the economic efficiency back and innovative technological risks in the management of new technologies (PC-7);
- readiness to manage objects of landscape architecture in the field of their functional use, protection and protection (PC-10);
- possession of techniques and methods of working with personnel, methods for assessing the quality and effectiveness of personnel work, the ability to organize the work of a team of performers, to make management decisions in the context of different opinions (PC-12);
- the ability to find a compromise between different requirements (cost, quality, safety and deadlines) for both long-term and short-term planning and determining the optimal solution (PC-13);
- readiness to obtain new knowledge and conduct applied research in the field of landscape architecture (PC-16);
- ability to develop work plans and research programs in the field of landscape architecture, the ability to organize the collection, processing, analysis and
- systematization of scientific and technical information on the research topic, the choice of methods and tools for solving problems (PC-17);
- the ability to prepare scientific and technical reports, reviews, publications based on the results of research in the field of landscape architecture (PC-18);
- the ability to manage the results of research activities and the commercialization of intellectual property rights (PC-19);
- readiness to formulate the goals and objectives of the project (program), the development of design assignments and technical specifications (PC-20);
- the ability to plan the organization of open spaces, design the external environment, design objects of landscape architecture, develop projects for the restoration and reconstruction of territories of cultural heritage objects (PC-21);
- readiness to participate in the project activities of organizations, to work in a team of specialists related to the sustainable development of territories at the stage of territorial planning and preparation of master plans for settlements and urban agglomerations (PC-22);
- the ability to carry out technical calculations for projects, a feasibility study and functional cost analysis of the effectiveness of projected measures, prediction of consequences, finding compromise solutions in planning and implementing projects (PC-23);
- readiness to develop (based on existing standards) methodological and regulatory documents for the design of landscape architecture objects (PC-24);

7. Structure

Educational practice in “Urban ecology” makes 3 ECTS (108 hours.)

№	Sections (stages) of practice	Kinds of educational work in practice, including independent work of students and labor input (hours)		Forms of current control
1	Preparatory stage, familiarization of students with general information about the objects and methods of research, work plan, safety instructions, organizational issues	Class work (8 hours)		Report
2	Field survey of urban soils with the collection of representative samples	Field work (16 hours)	Class work on data processing (14 hours)	Report, practice diary
3	Analysis of soil physical and chemical properties in the laboratory	Lab work (16 hours)	Class work on data processing (14 hours)	Report, practice diary
4	Processing and analysis of data, assessment of integrated soil pollution, comparison with standards of soil quality, preparation of conclusions and recommendations	Class work (24 hours)		Report
5	Preparation and defense of the report on educational practice.	Class work, preparation of the report (10 hours)	Report defense (6 hours)	Report

8. Educational and research technologies used for the educational practice: For material and technical support of educational practice, the following equipment was used: field equipment (a set of soil augers Ejelkamp, GPS navigator), chemical analytical equipment of the laboratory, as well as computer classes, a specialized audience and library fund, laser range finder, level meter, theodolite, plotter

9. Software: QGIS, R, MS Office (Word, Excel, Power Point), access to the web-libraries Scopus and Web of Science.

10. Teaching and methodological support of students' independent work in educational practice.

The program of educational practice, developed by the Department of Landscape Design and Sustainable Ecosystems of the Agrarian-Technological Institute of the RUDN University, methodical recommendations on the organization and conducting practices for graduate students of the Landscape Architecture direction, Teodoronsky VS, Fatiyev MM Construction and operation of urban landscaping // study guide. Publishing house: M. Forum.-2011. 237s

10. Educational and methodical and informational support of research practice

a) Basic literature:

- 1) Kurbatova A.S., Bashkin V.N., Kasimov N.S. «Ecology of a city». – 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 Russia).
- 3) Alberti M. Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems Springer; 2008 366 p.
- 4) R.T.T. Forman. Urban Ecology: Science of Cities Cambridge University Press 2014. 474 p.
- 5) J. Niemela, J. H. Breuste, G. Guntenspergen. Urban Ecology: Patterns, Processes, and Applications. Oxford University Press; Reprint edition. 2012. 392 p.

b) Supplementary literature:

- 1). Bandaranayake W., Qian Y. L., Parton W. J., Ojima D. S. and Follett R. F., 2003. Estimation of Soil Organic Carbon Changes in Turfgrass Systems Using the CENTURY Model. Agron. J. 95, 558–563.
- 2). Dolgikh, A.V., Aleksandrovskii, A.L., 2010. Soils and cultural layers in velikii Novgorod. Eurasian Soil Science, 43, 477–48.

- 3). Gerasimova, M.I., Stroganova, M.N., Mozharova, N.V., Prokofieva, T.V., 2003. Urban Soils. Oykumena, Smolensk.(in Russian)
- 4). Golubiewski, N.E., 2006. Urbanization Increases Grassland Carbon Pools: Effects of Landscaping in Colorado's Front Range. *Ecological Applications* 16, 555-571.
- 5). Ilina, I.N. (Eds.), 2000. Environmental atlas of the Moscow city. ABF. Moscow (in Russian)
- 6). Jo, H.K., McPherson E.G., 1995. Carbon Storage and Flux in Urban Residential Greenspace. *Journal of Environmental Management* 45, 109–133.
- 7). Kaye, J.P., McCulley, R.L., Burkez, I.C., 2005. Carbon fluxes, nitrogen cycling, and soil microbial communities in adjacent urban, native and agricultural ecosystems. *Global Change Biology* 11, 575-587.
- 8). Lorenz, K., Lal, R., 2009. Biogeochemical C and N cycles in urban soils. *Environment International* 35, 1–8.
- 10). Pickett, S.T.A., Cadenasso, M.L., Grove, J.M., Boone, C.G., Groffman, P.M., Irwin, E., Kaushal, S.S., Marshall, V., McGrath, B.P., Nilon, C.H., Pouyat, R.V., Szlavecz, K., Troy, A., Warren, P., 2011. Urban ecological systems: scientific foundations and a decade of progress. *Journal of Environmental Management* 92, 331–362
- 11). Prokofieva, T.V., Stroganova, M.N., 2004. Soils of Moscow city (soils in urban environment, their specifics and environmental significance). Moscow Biological. GEOS, Moscow.
- 12). Scalenghe, R., Marsan, F.A. The anthropogenic sealing of soil in urban areas, 2009. *Landscape and urban planning* 90, 1-10. .
- 13). Vasenev, V.I., Ananyeva, N.D., Makarov, O.A., 2012. Specific features of the ecological functioning of urban soils in Moscow and Moscow oblast. *Eurasian Soil Science* 45, 194-205.
- 14). Vasenev, V.I., Stoorvogel, J.J., Vasenev I.I., 2013b. Urban soil organic carbon and its spatial heterogeneity in comparison with natural and agricultural areas in the Moscow region. *Catena*. 107.96-102.
- 15). Vrscaj, B., Poggio, L., Marsan, F., 2008. A method for soil environmental quality evaluation for management and planning in urban areas. *Landscape and Urban Planning* 88, 81-94

в) Software and web-resources: <http://www.mvarchicad.com><http://artlantis.ru/>
<http://www.autodesk.ru>. <http://www.adobe.com>. <http://www.archibase.net>.
<http://www.artshare.ru>. <http://archicad.ru/>. <http://www.archicad-edu.info>.
<http://www.archi-tec.ru/>. <http://www.arhitekto.ru/>. <http://arkhitektura.ru/>.
<http://www.archibase.net>. <http://www.gardener.ru/>. <http://www.landshaft.ru/>

12. Forms of intermediate certification (practice results)

Certification of educational practice is carried out in the form of a differentiated test based on the practice diary, the student's report on the internship and the implementation of the practice plan.

13. Evaluation criteria for the intermediate certification of students in educational practice

Certification of educational practice is carried out for students in the credit-modular system according to the ECTS grading system.

Educational practice is given 3 ECTS.

In accordance with the ECTS system, a student can get 100 points maximum for the practice.

The evaluation criteria are the following:

Points	Russian marks	ESTC Marks
95-100	5	A
86-94		B
69-85	4	C
61-68	3	D
51-60		E
31-50	2	Fx
0-30		F
51-100	Test	Passed

- Diary preparation - 20 points;
- Literature review - 20 points;
- Report content - 20 points;
- Report formatting - 10 points;
- Report presentation - 20 points;
- Report defense - 10 points;

Attestation of a student on educational practice is conducted by a commission of four teachers, chaired by the head of the department. The protection of the practice report is in the short report (5-10 minutes) of the student and in the answers to the questions on the substance of the report.

According to the results of protection of the report, the student is given an assessment of educational practice. In evaluating the report, the content and correctness of the student's diary on educational practice, the report on educational practice, the characteristics of the practice managers from the organization and the department, the quality of answers to questions during the report protection are taken into account.

A student who has not completed the practice program for a disrespectful reason, has received a negative feedback from the supervisor on the work or has an unsatisfactory rating in defending the report, by agreement with the graduating department, may be sent to the practice again during his free time or presented to the dismissal as having academic debt in the order stipulated by the University Charter. Students-trainees who violate the rules of internal order, leaders of enterprises, institutions and organizations may be subject to penalties, which is informed by the leadership of the University. The rector decides on the possibility of further student stay at the University. A student who has not completed the practice for a good reason, passes it in her free time. In some cases, the practice can be organized on the basis of the laboratories of the graduating department.

The results of the students' practice are discussed at the meeting of the graduating department.

The program is compiled in accordance with the requirements of OS VO RUDNF / FROS VO.

Developers:

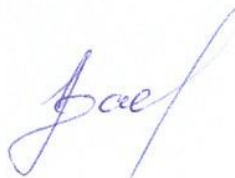
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