



# Course Syllabus

## 1. Course Title:

Ecology of the city

## 2. Academic Level:

Master

## 3. ECTS Credits:

5 ECTS

## 4. Semester:

Autumn semester

## 5. School/Department:

Institute of Earth Sciences, Department of Physical Geography, Ecology and Environmental Protection

## 6. Location:

40 Zorge Str., Rostov-on-Don

## 7. Instructor:

Assoc. Prof. Olesya Nazarenko, email: [ovnazarenko@sfedu.ru](mailto:ovnazarenko@sfedu.ru)

## 8. Language of Instruction:

English

## 9. Course Description:

The progressive development of humanity cannot be stopped or reversed, just as the evolutionary processes are irreversible. In this regard, we can say that urbanization is the future of all mankind, since the share of the urban population on the planet is steadily growing. In a certain sense, urbanized landscapes are model territories, on the example of which specialists are given a chance to solve a number of issues of global and regional ecology. It is an optional special academic discipline intended to give students a richer understanding of environmental problems and environmental pollution.

The development of society is characterized by an increase in the consumption of natural resources, deterioration and reduction of the gene pool of populations and the ecology of their habitat, depletion of stocks of non-renewable natural raw materials, negative changes in the environment under the influence of natural and anthropogenic environmental factors. Ecological knowledge about the interaction of man and nature, its consequences, and the dependence of the development of society on the state of nature and the environment was formed in close relationship with ideas about the need to protect them. Overcoming the consumer attitude to natural resources has become one of the most important principles of creating the scientific foundations of sustainable development - the theory of socio-economic development of mankind and societies, which provides for meeting the life needs of each generation of people without compromising the nature and future generations.

## 10. Course Aims:

Course (module) aims: Students learn the general principles of function geosystem and the implementation of all human activities and peculiarities of ecology in the city, either related to the direct use of nature and its resources or to its modifying influences.

The purpose of the discipline is to learn the General principles of the functioning of geosystems and the implementation of all human activities, associated either with the direct use of nature and its resources, or with changing its effects. Explore the main features of nature management of different components of the natural environment with special attention to city problems. Identify the main principles of environmental management.

## 11. Specific entry requirements (if any):

Basic skills in Physics, Chemistry, Geography, Meteorology, Hydrology, Biogeography, Ecology, English language (B1+) in order to understand and analyze environmental problems of the city.

## 12. Course Content:

Module 1.

Anthropogenic impact on nature. Subject, tasks, object of the subject rational use of natural resources and environmental protection. The purpose is to introduce students to the main definitions, to show the role of anthropogenic impact on environmental protection. Anthropogenic impact on nature. Environmental problems

Module 2.  
Rational use and protection of nature. Rational use and protection of atmospheric air. The goal is to identify the factors that affect the quality of atmospheric air. Rational use and protection of water resources. The goal is to identify the factors that affect water quality. Rational use and protection of mineral resources and land resources. Protection and rational use of plant resources and wildlife. Protected areas and protection of anthropogenic landscapes. Environmental pollution and public health.

## 13. Intended Learning Outcomes:

Knowledge: methodological and theoretical foundations of environmental protection, protection of atmospheric air, water resources, geological environment and subsoil, land resources, protection of flora and fauna.

Skills: apply knowledge of the modern fundamentals of environmental protection. To collect and analyze the initial information; to put forward proposals for creating an artificial environment and reducing anthropogenic impact in order to improve the environment; to create objects in the urban context, taking into account modern requirements and the existing urban structure.

Other skills: to master the conceptual apparatus of the discipline, to learn how to predict the consequences of changes in the environment under the influence of human activity.

## 14. Learning and Teaching Methods:

Lectures and seminars.

## 15. Methods of Assessment/Final assessment information:

Written tests and discussion of the reviewed scientific papers at seminar classes.

## 16. Reading List:

Adaptation Principles : A Guide for Designing Strategies for Climate Change Adaptation and Resilience <https://openknowledge.worldbank.org/handle/10986/34780>

Eco2 Cities: Ecological Cities as Economic Cities <https://openknowledge.worldbank.org/handle/10986/2453>

Saving Earth|Encyclopedia Britannica <https://www.britannica.com/explore/savingearth/pollutionoverview>

Aging of Polymers and Polymeric Materials Caused by Environmental Impact/

<https://biblioclub.ru/index.php?page=book&id=612201>

Stephane, Hallegatte; Jun, Rentschler; Julie, Rozenberg Adaptation Principles :

A Guide for Designing Strategies for Climate Change Adaptation and Resilience . World Bank, 2020.

Nazarenko, O. V. Temporal and spatial variability in air temperature and precipitation in the basin of Azov sea over the period 1966–2015 / O. V. Nazarenko // 20th International Multidisciplinary

Scientific GeoConference SGEM 2020, Albena. – Sofia: , 2020. – P. 483-491. – DOI

10.5593/sgem2020/4.1/s19.060. (Scopus)

Nazarenko, O. Climate factors of groundwater formation: A case study of the Lower Don (2019)

E3S Web of Conferences, 98, статья № 09022. DOI: 10.1051/e3sconf/20199809022 (Scopus, WoS)

Nazarenko, O. V. Variability of the water regime of the Lower Don // 19th International

Multidisciplinary Scientific GeoConference SGEM 2019 (30 June - 6 July, 2019) Vol. 19. Issue 3.1 pp. 617-624 DOI 10.5593/sgem2019/3.1/S12.079 (Scopus)

Nazarenko O.V. Nitrate contamination of groundwater in Rostov region// 18th International

Multidisciplinary Scientific GeoConference, SGEM 2018, Water Resources. Forest, Marine and Ocean Ecosystems. Conference Proceedings. – Volume 18. – Issue 3.1. Albena, Bulgaria. – p. 523-530 (Scopus)

Fedorov Yu.A., Nazarenko O.V. Dynamics of water level regime and water balance of lake Bolshoy

Tambukan // 18th International Multidisciplinary Scientific GeoConference, SGEM 2018, Ecology, Economics, Education and Legislation Conference Proceedings.– Issue 5.1 – Volume 18. Ecology and Environmental Protection. Albena, Bulgaria. – p. 289-296 (Scopus)