

**Thematic plan for lecture-type classes  
in the subject "Pharmaceutical ecology"  
for students admitted in 2024  
according to the educational program  
33.05.01 Pharmacy,  
focus (profile) Pharmacy,  
(specialty),  
full-time education  
for the 2025-2026 academic year**

No.	Topics of lecture-type classes	Hours (academic)
<b>4<sup>th</sup> semester</b>		
1.	<b>Pharmaceutical ecology as a science and its connection with general ecology.</b> <sup>1</sup> Subject and content of ecology, pharmaceutical ecology, environmental protection. History of formation and development. Habitat. Environmental factors, classification. The doctrine of the biosphere. Modern problems of ecology. Environmental problems characteristic of the Volgograd region. The importance of environmental education and training in the work of a pharmacist. <sup>2</sup>	2
2.	<b>Habitat. Environmental factors, classification. Adaptation of the organism to environmental factors. Basic laws and rules of adaptation. Basic mechanisms of formation of adaptations at the organism level.</b> <sup>1</sup> Types of environmental factors. Patterns of influence of environmental factors on the organism: optimum rule; minimum rule; Shelford tolerance rule; rule of two levels of adaptation; ambiguity of the effect of a factor on various functions of the organism; rule of interaction of factors; law of ecological duplication. Adaptation of the organism to environmental factors. Basic laws and rules of adaptation. Basic mechanisms of formation of adaptations at the organism level. Features of adaptation of organisms to various living environments. <sup>2</sup>	2
3.	<b>Ecology of nutrition: xenobiotics in food products, food additives, biologically active food additives</b> <sup>1</sup> Quality and safety of food products. Xenobiotics in food products; classification of xenobiotics entering the alimentary route. Food additives: definition, classification, modern approaches to standardization. Biologically active food additives: concept, main classifications, regulation of turnover. <sup>2</sup>	2
<b>5<sup>th</sup> semester</b>		
4.	<b>Chemical and pharmaceutical enterprises as sources of environmental pollution. Environmental problems of labor in pharmaceutical enterprises.</b> <sup>1</sup> Characteristics of the main production poisons of the chemical and pharmaceutical industry. Harmful effects of chemicals on workers of pharmaceutical enterprises. Prevention of harmful effects of chemicals. Ecological characteristics of the main technological processes of the chemical and pharmaceutical industry. Environmental problems in the production of drugs. Environmental control in production. <sup>2</sup>	2
5.	<b>Natural environment, natural conditions and natural resources. The essence and main types of nature management.</b> <sup>1</sup> Nature. Elements of nature: natural conditions and natural resources. The role of external and internal factors in determining the characteristics of natural conditions. Natural resources: concept, characteristics, classification. Features of the interaction of society and nature at the present stage. The concept, types and forms of nature management. Principles of rational nature management. Environmental problems of nature management <sup>2</sup>	2
6.	<b>Rational nature management. Nature protection measures, the role of technical progress in environmental protection. Environmental protection from special types of impacts.</b> <sup>1</sup> Rational nature management: concept, goals and objectives. Basic principles of environmental protection. Protection from parametric types of environmental pollution (thermal, noise, light and electromagnetic). Environmental protection from production and consumption waste, Protection from biological	2

	impact. Protection of rare and endangered animals and plants. <sup>2</sup>	
	Total	12

<sup>1</sup>- topic

<sup>2</sup> - essential content

Considered at a meeting of the Department of General Hygiene and Ecology of the N.P. Grigorenko Institute of Public Health, minutes of May 23, 2025, No. 10.

Head of Department



N.I. Latyshevskaya