

**Thematic lesson plans of lectures in the discipline «Methods of experimental study of the molecular basis of drug action»
for students of 2023 admission
under the educational program
33.05.01 Pharmacy,
Pharmacy profile
specialty,
full-time form of education
for the 2024-2025 academic year**

№ п/п	Topics of lectures	Summary	Hours (academic)
1.	Relevance and problems of creating new drugs	History of the issue. Main achievements in pharmacology in the 20th–21st centuries. Volgograd school of pharmacology.	2
2.	Directions for the search for biologically active substances. Canonical and alternative methods for creating drugs.	Problems and methods of modern pharmacology.	2
3.	Use of in silico methods in the search for and creation of new drugs.	Modern technologies for searching for new biologically active substances using computer technologies. Trends in the use of artificial intelligence.	2
4.	General principles for conducting drug pharmacokinetic studies.	Methods for studying the absorption, distribution, metabolism and excretion of drugs, as well as their bioavailability. Study of drug toxicokinetics. Evaluation of pharmacokinetic drug interactions.	2
5.	General principles for conducting preclinical studies.	The concept of preclinical studies (DS), the role of DS in the development of drugs, tasks and types of DS. Requirements for conducting DS within the framework of national and international standards of good laboratory practice (GLP): site, equipment and personnel. Biological	2

		test systems (in vitro, ex vivo, in vivo and in silico). Types and methods of DS. Design of conducting DS.	
6.	New dosage forms	Modern approaches to creating drug delivery forms. Importance in modern pharmacology. Trends.	2
7.	Methodology of evaluation. General toxic properties of drugs at the stage of their preclinical study.	General principles of preclinical study of drug safety. Animal species and sufficiency in pharmacotoxicology. Drug safety parameters. Acute, subchronic (subacute) and chronic toxicity. Carcinogenic and mutagenic (genotoxicity) potential. Reproductive toxicity and embryotoxicity. Local irritant effect. Specific types of toxicity (allergic effect, immunotoxicity and immunogenicity, addictive potential, toxicity of metabolites).	2
8.	General principles for conducting clinical trials	Definition. Classification of clinical trials. Objectives, types and phases of clinical trials. Stages of a clinical trial (development of study design; patient selection, randomization; protocol creation; conducting the study; data processing and statistical analysis of results; clinical interpretation of results).	2

9.	Evidence-based medicine and real-world clinical practice data	Principles of Evidence-Based Medicine: Understanding Data in Real-World Clinical Practice.	2
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Considered at meeting of the department of Pharmacology and bioinformatics

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Head of the Department of Pharmacology
and Bioinformatics, Academician of the
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