

SYLLABUS OF THE EDUCATIONAL COMPONENT

PHARMACOLOGY



for higher education applicants of the 3rd year of full-time form education

Educational program "Pharmacy"
Specialty 226 "Pharmacy, industrial pharmacy"
Area of knowledge 22 "Health care"
Second (master's) level of higher education

TEACHERS

			Information about the teacher
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- Name of higher education institution and unit:** National University of Pharmacy, Department of Pharmacology and Clinical Pharmacy.
- Address:** Kharkiv, str. Kulikovskaya, 12, 2nd floor, Ph. 057-706-30-69.
- Website:** <http://pharmacol.nuph.edu.ua>
- Consultations:** take place online in accordance with the schedule posted on the website of the Department of Pharmacology and Clinical Pharmacy (at the link <https://pharmacolpharmacother.nuph.edu.ua>).

5. Abstract of the educational component: the educational component "Pharmacology" provides students with the formation of a complete system of the theoretical knowledge about the route of administration, types of action, dosage of drugs, mechanisms of action, pharmacodynamics, pharmacokinetics, indications, side effects and contraindications, interchangeability medicines each pharmacological group stages of medicines as well as identifying the main areas of scientific ideas and trends pharmacology.

6. The purpose statement of studying the educational component: The teaching of the course "Side effects of drugs" is to form and deepen students' professional and competent knowledge the pharmacological properties and conditions of the modern rational use of drugs.

7. Competences in accordance with the educational program:

Soft- skills / General competences (CG):

CG 6. Knowledge and understanding of the subject area and understanding of professional activity.

Hard-skills / Professional (special) competences (PC):

PC 1. The ability to act socially responsibly and civically.

PC 2. Ability to apply knowledge in practical situations, make informed decisions.

PC 4. Ability to think abstractly, analyze and synthesize, learn and be modernly educated.

PC 5. Ability to show initiative and entrepreneurship.

8. The program learning outcomes: (PLO):

PLO 5. To position one's professional activity and personal qualities on the pharmaceutical labor market; formulate the goals of one's own activity taking into account public and industrial interests.

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PLO 7. Perform professional activities using creative methods and approaches.

PLO 8. Carry out professional communication in the state language, use oral communication skills in a foreign language, analyze specialized texts and translate foreign language information sources.

PLO 13. To carry out sanitary and educational work in professional activities in the event of outbreaks of infectious, viral and parasitic diseases.

PLO 14. Determine the advantages and disadvantages of drugs of various pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic and pharmacodynamic characteristics. Recommend to consumers nonprescription drugs and other products of the pharmacy assortment with the provision of advisory assistance and pharmaceutical care.

PLO 16. Determine the influence of factors that affect the processes of absorption, distribution, deposition, metabolism and excretion of the medicinal product and are determined by the condition, features of the human body and the physico-chemical properties of medicinal products.

PLO 25. To contribute to the preservation of health, in particular the prevention of diseases, the rational prescription and use of medicinal products. To conscientiously fulfill one's professional duties, to comply with the legislation on the promotion and advertising of medicinal products. Possess psychological communication skills to achieve trust and mutual understanding with colleagues, doctors, patients, consumers.

9. Status of the educational component: *Compulsory*

10. Prerequisites of the educational component: The educational component «Pharmacology» is based on the study of biology and genetics fundamentals, physiology and human anatomy, microbiology with immunology fundamentals, pathological physiology, biochemistry, as well as a unit of chemical courses and medicine technology and integrates with these components

11. The scope of the educational component: 10.0 ECTS credits 300 hours in general: 146 hours of classwork (32 hours of lectures, 114 hours of practical classes), 154 hours of individual work.

12. Organisation of the teaching process:

Teaching methods:

- explanatory (informational and reproductive) method: lecture-based learning - lectures, video materials;
- problem-based teaching: brainstorming - "brainstorming" method; case-based learning - case method;
- partial search method: game-based learning - game-based learning methods (business games); Team-based learning- a method of working in small groups.

Content of the educational component

MODULE 1. General pharmacology. Medicines affecting peripheral nervous system and neurotransmitter processes

Content module 1. General pharmacology. General prescription

Topic 1. Introduction to prescription writing. Prescription writing of solid and soft medicinal forms

Topic 2. Rules of liquid medicinal forms prescription writing

Topic 3. General pharmacology. Kinds of action and routes of administration of drugs. The mechanisms of action, pharmacodynamics and pharmacokinetics of drugs

Topic 4. General pharmacology. Classification and principles of the drug dosing. The phenomena that occur during the repeated and combined administration of drugs. Side effects of drugs

Content module 2. Medicines affecting peripheral nervous system and neurotransmitter processes. Pharmacological correctors of pain and inflammation.

Topic 5. Drugs affecting the afferent innervation

Topic 6. Medicines affecting efferent innervation: pharmacological description of cholinergic agonists

Topic 7. Medicines affecting efferent innervation: pharmacological description of cholinergic antagonists

Topic 8. Medicines affecting efferent innervation: pharmacological description of adrenergic agonists and antagonists

Topic 9. Intermediants. Pharmacological correctors of allergy

Topic 10. Pharmacological correctors of pain and inflammation. Medicines for general anesthesia. Alcohols

Content module 3. Drugs that affect the function of the central nervous system and gastro-intestinal tract

Topic 11. Psychotropic and neurotropic drugs with inhibitory action. Antipsychotics. Tranquilizers. Sedatives. Hypnotics. Anticonvulsants. Antiparkinsonian

Topic 12. Psychotropic and neurotropic drugs with excitatory action. Psychostimulants. Anti-depressants. Nootropics. Analeptics. Actoprotectors. Adaptogens

Topic 13. Drugs that affect the function of the gastrointestinal tract: appetite correctors, emetic, anti-emetic, anti-ulcer, gastroprotectors

Topic 14. Drugs that affect the function of the gastrointestinal tract: hepatoprotectors, spasmolytic, choleretic (choleretics, cholekinetiks) and cholelytics, laxative drugs

SEMESTER CREDIT

MODULE 2. Drugs that affect the functions of the executive organs, metabolism, blood and immune system. Chemotherapeutic drugs

Content module 4. Drugs that affect the functions of the executive organs

Topic 15. Drugs that affect the functions of the respiratory system. Decongestants, anti-tussive drugs, broncholytics, expectorants, mucolytics, surfactants

Topic 16. Cardiotonic agents: glycoside and nonglycoside cardiotonics. Anti-arrhythmic agents

Topic 17. Anti-anginal drugs: nitrovasodilators, calcium channel blockers, β -adrenoblockers, coronarolytics, cardioprotectors

Topic 18. The pharmacological characteristics of cerebral blood flow disorders correctors. Anti-atherosclerotic medicines

Topic 19. Antihypertensive drugs: agonists of imidazoline receptors, α - and β -adrenoblockers, ganglionic blockers, sympatholytics, slow calcium channel blockers, ACE inhibitors, angiotensin II receptor antagonists, peripheral vasodilators etc

Topic 20. Drugs that affect the function of the urinary-genital system. Diuretics. Antigouts.

Content module 5. Drugs that affect the functions of the metabolism, blood and immune system

Topic 21. Correctors of cellular and tissue metabolism: vitamin and vitamin-like medicines; enzyme and anti-enzyme medicines; antihypoxants and antioxidants

Topic 22. Drugs that affect blood coagulative system

Topic 23. Drugs that affect blood formation. Pharmacology of iron medicines. Correctors of leucopoiesis

Topic 24. Drugs with activity of hormones of the hypothalamus, pituitary, epiphysis, thyroid, parathyroid gland. Insulins. Synthetic hypoglycemic drugs

Topic 25. Drugs with activity of adrenal gland hormones and gonads. Anabolic steroids

Content module 6. Chemotherapeutic drugs

Topic 26. Antitumor drugs. The principles of treatment of poisoning by drugs and substances. Antidotes. Radioprotectors

Topic 27. Synthetic antibacterial drugs. Sulfonamides. Fluoroquinolones. Antituberculous medicines

Topic 28. Antibiotics: penicillins, cephalosporins, monobactams, carbapenems, macrolides, tetracyclines

Topic 29. Antibiotics of different groups: aminoglycosides, glycopeptides, lincosamides, polymyxins,

chloramphenicols, rifamycins etc

Topic 30. Antiviral, antifungal and antihelminthic drugs

Topic 31. Antiprotozoal and antispirochetal drugs

Topic 32. Antiseptics and disinfectants

SEMESTER CREDIT

SEMESTER EXAM

Organization of independent work:

Individual work includes studying questions on topics of the educational component that are not included in classroom learning, and performing tasks on these issues in order to consolidate the theoretical material.

13. Types and forms of control:

Current control:

Control of knowledge in each lesson (on each topic): oral surveys, writing test tasks, solving situational (calculation) problems.

Control of content modules: oral survey, compilation test tasks, solution of situational (calculation) problems.

Conditions for admission to the control of content modules: for admission to the control of content module 2, it is necessary to have a minimum number of points for the topics (lessons) of content module 1, for the control of content module 1

Semester control:

Semester control form: semester credit, semester exam.

Semester exam: answers to theoretical questions, writing test tasks, solving situational (calculation) problems.

Conditions for admission to semester control: to semester credit - current rating is more than 60 points, absence of unworked absences of practical classes, performance of all types of work and requirements provided for by the work program of the educational component. to the semester exam - the number of points for all semester credits from the educational component provided by the curriculum is more than 60 points, compliance with the terms of the contract (the presence of a note from the dean (deputy dean) of the faculty in the individual study plan of the applicant of higher education about admission to the session).

14. The assessment system for the educational component:

Assessment of the acquisition of topics of the educational component during classes:

Assessment of the acquisition of topics of the educational component during classes:			
<i>The number of the topic (lesson) of the educational component</i>	<i>The maximum number of points by topic (lesson)</i>	<i>Distribution of the maximum number of points per topic (lesson) by type of work</i>	<i>Types of work for which the applicant receives points</i>
<i>Module 1.</i>			
<i>Topic 1-17</i>	5	3	oral answer
		1	test
		1	solving situational tasks
<i>Total points for module 1:</i>		70	
<i>Module 2.</i>			
<i>Topic 19-32.</i>	5	3	oral answer
		1	test
		1	solving situational tasks
<i>Total points for module 2:</i>		70	

Instead of performing types of work on any topic of the educational component, the following types of work of an applicant of higher education may be counted:

- participation in workshops, forums, conferences, seminars, webinars on the topic of the educational component (with the preparation of essays, abstracts of reports, information messages, etc., which is

- confirmed by the program of the event, or abstracts of reports, or a corresponding certificate);
- participation in research and applied research on the topic of the educational component (in the development of questionnaires, conducting experimental studies, processing research results, preparing a report, presenting results, etc., which is confirmed by the demonstration of relevant materials).

The assessment of applicants by types of work during classes:

<i>Types of work, for which the acquirer receives points</i>	<i>Maximum number of points</i>
answers to theoretical questions	24
solving situational tasks	14
Testing	14
Total points:	70

The assessment during control of content modules:

<i>Types of work, for which the acquirer receives points</i>	<i>Distribution of the maximum number of points for control of the content module by types of works</i>	<i>The maximum number of points for control of the content module</i>
Content module 1		
Testing	4	10
answers to theoretical questions	6	
Total points for control of content module:		10

The assessment of independent work of the applicant of higher education:

during the current control: 2 points - testing, 2 points - oral answer, 1 point - solution of situational tasks.
during content module control: content module tickets include theoretical questions and test tasks on all topics of the content module.

The assessment scale of the semester credit, semester examination:

Specify which assessment scales are used in the study of the educational component and provide them.
When studying the educational component, several assessment scales are used: 100-point scale, four-point scale ("Excellent", "Good", "Satisfactory", "Unsatisfactory") differentiated scale (for semester differentiated credit test and examination) and undifferentiated assessment (pass/fail), two-point scale (for semester credit test) and ECTS rating scale. Results are converted from one scale to another according to the table.

Total points by a 100-point scale	ECTS rating scale	Assessment by a four- point scale	Assessment by an undifferentiated scale
90-100	A	Excellent	passed
82-89	B	Good	
74-81	C		
64-73	D	Satisfactory	
60-63	E		
35-59	FX	Unsatisfactory	failed
1-34	F		

15. Academic policies of the educational component:

Academic Integrity Policy. It is based on the principles of academic integrity stated in the POL "On measures to prevent cases of academic plagiarism at the National University of Pharmacy". Writing off when assessing the success of an applicant of higher education during control measures in practical (seminar, laboratory) classes, control of content modules and semester exams is prohibited (including using mobile devices). Abstracts must have correct text references to the used literature. The detection of signs of academic dishonesty in the applicant of higher education written work is a reason for the teacher not to

enroll it.

Class attendance policy. An applicant of higher education is obliged to attend classes (POL "On the organization of the educational process of the National University of Pharmacy") according to the schedule (<https://nuph.edu.ua/rozklad-zanyat/>), to observe ethical norms of behavior.

Policy regarding deadlines, working out, rating increase, liquidation of academic debt. Completion of missed classes by applicants of higher education is carried out in accordance with the POL "Regulations on the completion of missed classes by applicants of higher education and the procedure for the elimination of academic differences in the curricula of the National University of Pharmacy" in accordance with the timetable for making up missed classes established at the department. Increasing the rating and liquidating academic debt from the educational component is carried out by the applicants of higher education of education in accordance with the procedure specified in the POL "On the procedure for evaluating the results of training of applicants of higher education at the National University of Pharmacy". Applicants of higher education are obliged to comply with all deadlines set by the department for the completion of types of written works from the educational component. Works that are submitted in violation of deadlines without valid reasons are evaluated for a lower grade - up to 20% of the maximum number of points for this type of work.

Policy on appeals of assessment from the educational component (appeals). Applicants of higher education have the right to contest (appeal) the evaluation of the educational component obtained during control measures. The appeal is carried out in accordance with the POL "Regulations on appealing the results of the semester control of the knowledge of applicants of higher education at the National University of Pharmacy".

Policy on recognition of learning outcomes obtained through non-formal and/or informal education by higher education applicants of higher education. Applicants of higher education have the right to recognition of learning results acquired in informal and informal education in accordance with the POL "On the procedure for recognition of learning results obtained through informal and/or informal education by applicants of higher education at the National University of Pharmacy".

As part of the academic freedom of the teacher, instead of performing types of work on the subject of the educational component, it is possible to enroll in the non-formal education of applicants of higher education.

16. Informational and educational and methodological support of the educational component:

Mandatory literature

1. Pharmacology-Cito! Textbook / Edited dy S.M. Drogozov. – Kharkiv: 2012. – 192 p.
2. Pharmacology at your palms: reference book / Drogozov S.M., Kutsenko T.A. – Kharkiv: NphaU, 2010. – 80 p.
3. Pharmacology : summary of lectures on special pharmacology (part I) / S.M. Drogozov, T.A. Kutsenko. – Kharkiv: NPhaU, 2009. – 72 p.
4. Pharmacology : summary of lectures on special pharmacology (part II) / S.M. Drogozov, T.A. Kutsenko, A.Yu. Pozdnyakova et al. – Kharkiv: NUPh: Golden Pages, 2012. – 80 p.

Additional literature for in-depth study of the educational component

1. Toxicology : Summary of lectures, practice and tests on toxicology / S.M. Drogozov, T.A. Kutsenko, A.Yu. Pozdnyakova, V.A. Ulanova. – Kharkiv: NUPh: Golden Pages, 2011. – 88 p.
2. Katzung B.G. Basic and Clinical Pharmacology, 9th edition. – New-York: Lange, 2004. – 1202 p.
3. Lippicott`s. Illustrated Reviews: Pharmacology, 4th Edition / Ed.: R. Finkel, M.A. Clark, L.X. Cubeddu. – Lippicott Williams Wilkins, 2008. – 560 p.
4. Rang H.P., Dale M.M., Ritter J.M., Moore P.K. Rang`s and Dale`s Pharmacology, 6th edition. – London: ChurchillLivingstone Elsevier, 2007. – 830 p.

Actual electronic information resources (magazines, sites, etc.) for in-depth study of the educational component

1. Internet resources:
 - State service of Ukraine for medicinal products // <http://dls.gov.ua> - Journal of pharmacology and pharmacotherapy // www.jpharmacol.com
 - Journal ScienceRise: Pharmaceutical Science // http://journals.urau.ua/sr_pharm/about - Journal of medical

affairs // <https://liksprava.com/index.php/journal>

2. Open access databases
(<https://lib.nuph.edu.ua/newscategory/bazi-danikh/>).

3. Databases Scopus (Elsevier); Web of Science (Clarivate analytics); ScienceDirect; Hinari, AGORA, ARDI, GOALI, OARE на платформі Research; Life;

4. Library of NPHU // <http://nuph.edu.ua/ru/nauchnayabiblioteka>;
E-mail: library@nuph.edu.ua

5. Website of the Department of Pharmacology and Pharmacotherapy NPHU // <http://pharmacolpharmacother.nuph.edu.ua>;
Email: pharmacolpharmacother@nuph.edu.ua

**Moodle distance learning
system**

<https://pharmel.kharkiv.edu/moodle/course/view.php?id=3804>

17. Material, technical and software support of the educational component:

Technical support – computer, video camera, multimedia projector, screen.

Software: Microsoft Word, Excel, Power Point , Acrobat rider , Google Workspace for Education Standard, ZOOM,MOODLE.