

MINISTRY OF HEALTH OF UKRAINE  
KHARKIV NATIONAL MEDICAL UNIVERSITY

Department of Pharmacology and medical prescription

Academic year 2022-2023

**SYLLABUS OF THE ACADEMIC COMPONENT**

«Pharmacology and Medical Prescription»

Mandatory academic component

Form of education                      full-time

Field of science                      22 «Health»

Specialty                              223 «Nursing»

Education and professional program «Nursing»


The first (bachelor's) level of higher education

Course second

The syllabus of the academic component was considered at the meeting of the Department of Pharmacology and medical prescription

Protocol of  
«26» August 2022 № 1


Head of the department

  
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Approved by Methodical commission of KhNMU of problems of general training

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**INTRODUCTION**

The syllabus of the academic component (AC) "Pharmacology and medical prescription" is made according to the Educational-professional program "Nursing" and the Standard of higher education of Ukraine, the first (bachelor) level, field of education 22 Health, specialty 223 Nursing.

The term of study in specialty is 4 years. According to the curriculum, the study of the subject is carried out in the 2nd year during the IV semester.

According to the approved curriculum of medical education seekers (ES), 135 hours (4,5 credits) are planned, including 26 hours of lectures, 44 hours of practical classes and 65 hours of self-work.

**Subject** of study of the AC "Pharmacology and medical prescription" it is study of the effectiveness and safety features of medicinal products in physiological and pathological conditions in patients with various diseases, taking into account the individual reactivity of the body, etiology and pathogenesis of the disease, and rules for prescribing.

**Interdisciplinary links:**

**Prerequisites.** They are based on the study of medical biology, physiology, pathophysiology, biochemistry, bioorganic and inorganic chemistry, which involves the integration of teaching with these subjects and the formation of skills to apply knowledge of pharmacology and medical prescription in the process of further education and professional activity.

**Post-requisites.** Pharmacology and medical prescription lays the foundations for the study of such special subjects as "internal medicine with evaluation of research

results", "pediatrics with evaluation of research results", "surgery with evaluation of research results", "infectious diseases with evaluation of research results", "endocrinology with evaluation research results", "propaedeutics of internal medicine" and others.

**Link to the page of the academic component "Pharmacology and medical prescription" in MOODLE**

<https://distance.knmu.edu.ua/course/view.php?id=5289>

## **1. THE AIM AND TASK OF ACADEMIC COMPONENT**

**1.1. The purpose** of studying the AC is the formation and development of future specialists' competences in the field of modern achievements of the science of pharmacokinetics and pharmacodynamics of drugs of various therapeutic groups, which are used for the treatment and prevention of diseases and pathological conditions, as well as the assimilation of concepts about the main dosage forms and the rules of prescribing.

**1.2. The main task** of the study of the AC "Pharmacology and medical prescription" are to provide ES with a certain programmatic amount of knowledge about the effect of medicinal products and preparations on the human body; to develop the ability to rationally use medicinal products and drugs for various diseases; teach ES to use reference literature, annotations to drugs.

**1.3. Competences and learning outcomes**, the formation of which contributes to the AC.

**1.3.1.** The study of the AC ensures that education seekers acquire the following **competencies**:

### **- integral:**

A bachelor of nursing is able to solve complex specialized tasks and practical problems in the field of nursing or in the learning process, which involves the application of certain theories and methods of the relevant science and is characterized by the complexity and uncertainty of conditions.

### **- general:**

GC 03. Ability to abstract thinking, analysis and synthesis.

GC 04. Ability to apply knowledge in practical situations.

GC 05. Knowledge and understanding of the subject area and understanding of professional activity.

GC 06. Ability to communicate in the national language both orally and in writing.

GC 10. Ability to make informed decisions.

### **- professional:**

PC 02. The ability to recognize and interpret signs of health and its changes, illness or disability (assessment/diagnosis), restrictions on the possibility of full-fledged life activities, and to determine the problems of patients with various diseases and conditions.

PC 04. Application of professional skills, medical preparations, interventions and actions to ensure the patient/client a dignified treatment, privacy (intimacy), confidentiality, protection of his rights, physical, psychological and spiritual needs on the basis of transcultural nursing, tolerant and non-judgmental behavior .

PC 05. The ability to effectively apply a combination of nursing skills (skills), medical devices, interventions and actions to provide care based on a holistic

approach, taking into account the satisfaction of the patient's needs for comfort, nutrition, personal hygiene and the ability of the person to meet his daily needs.

PC 12. The ability to orientate in determining the group affiliation of drugs, features of their pharmacokinetics and pharmacodynamics.

PC 13. The ability to identify the relationship between clinical manifestations of diseases and the results of additional methods of examinations.

PC 14. The ability to organize and provide emergency care in various acute conditions.

### 1.3.2. Program learning outcomes (PLO).

#### Learning outcomes:

Integrative final program learning outcomes, the formation of which is facilitated by the AC (skills):

PLO 11. To coordinate activities using a combination of multiple skills to ensure patient nutrition.

PLO 13. To prescribe, store and apply pharmacological agents.

PLO 20. Properly maintain appropriate medical records.

1.3.3. The study of the AC provides education seekers with the following social skills (Soft skills):

- integrity - to encourage students to work selflessly in groups. Each member of the group should be responsible for a specific job or result. At the end of the group work, students should think about how they contributed to the work and why they deserve part of the final assessment;

- communication - to develop students' communication skills in oral and written forms, to participate in group discussions and to represent the group. They must be able to speak to the audience and communicate their ideas;

- courtesy - to ensure that students are respectful and polite to each other in the classroom and when working with other people;

- responsibility - to instill in students a sense of duty to the leader and other members of the group for the task given to him, to oblige to explain the reasons for non-fulfillment of the task and ways to correct the situation;

- flexibility - to give students long-term, problematic projects that must be completed within the established parameters and deadlines. These measures will stimulate them to organize and focus, to solve production problems and self-control;

- teamwork - encourage teamwork and collaboration through group work and assign different students to work together. Emphasize the importance of connection, trust, integrity, responsibility and cooperation.

## 2. THE CONTENT OF THE ACADEMIC COMPONENT

Indicator description	Branch of knowledge, specialty, educational and qualification level, EPP	Characteristic of academic component
		full-time education
Quantity of credits – 4,5	Field of education: 22 Health	normative

Total quantity of hours- 135	Specialty: 223 Nursing	Year of study:
		2rd
		Semester
		4th
Hours for full-time education: in-class – 70 student's self-work- 65	Educational and qualification level: first (bachelor)  EPP Nursing	Lectures
		26 h
		Practical classes
		44 h
		Self-work
		65 h
		Type of control: exam

## 2.1. Description of academic component

### 2.1.1. Lectures

№	Name of the topic	Number of hours	Type of the lecture
1	Introduction. General pharmacology.	2	thematic
2	Drugs that affect the transmission in cholinergic synapse. M- and N-cholinomimetics. Anticholinesterase drugs. Cholinoblocking agents. M- and N-cholinoblockers.	2	thematic
3	Drugs that affect the transmission in adrenergic synapse. Adrenomimetics. Adrenoblockers.	2	thematic
4	Pharmacology of drugs affecting the CNS. Pharmacology of narcotic and non-narcotic analgesics. Modern principles of chronic pain treatment.	2	thematic
5	Psychotropic preparations. Pharmacology of neuroleptics, tranquilizers, sedatives.	2	thematic
6	Antianginal preparations. Antiarrhythmic drugs.	2	thematic
7	Hypertensive and antihypertensive preparations. Diuretics.	2	thematic
8	Drugs affecting the respiratory system.	2	thematic
9	Drugs that affect function of the digestive system: pharmacology of drugs which influence excretory and motor function of the stomach, drugs used in disorders of excretory function of the pancreas.	2	thematic
10	Drugs affecting the blood: coagulants, anticoagulants, fibrinolytics, antifibrinolytics, antiplatelet drugs.	2	thematic
11	Antiseptic and disinfectant drugs. Sulfanilamide drugs. Antimicrobials of different chemical structures.	2	thematic
12	Pharmacology of antibiotics.	2	thematic
13	Antimycobacterial drugs. Principles of acute poisoning treatment. Antidotes.	2	thematic
<b>Total hours of lectures</b>		<b>26</b>	

### 2.1.2 Seminar classes

Not provided for by the academic component program.

### 2.1.3. Practical classes

№	Name of the topic	Number of hours	Teaching methods	Forms of control
1	Basics of prescription. The concept of a medicinal substance, medicinal preparations, forms of medicines. Solid medicinal forms.	2	story-explanation, conversation, simulation of situations	oral examination (individual and frontal); written survey
2	Soft and liquid medicinal forms.	2	story-explanation, conversation, simulation of situations	oral examination (individual and frontal); written survey
3	General pharmacology. Pharmacokinetics. Pharmacodynamics.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
4	Drugs affecting the afferent innervation: local anesthetics, astringents, adsorbents, irritating agents.	2	story-explanation, conversation, simulation of situations	oral examination (individual and frontal); written survey; test control
5	Drugs that affect the transmission in cholinergic synapse. M- and H-cholinomimetics. Anticholinesterase drugs. Cholinoblocking agents. M- and N-cholinoblockers.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
6	Drugs that affect the transmission in adrenergic synapse. Adrenomimetics, sympathomimetics. Antiadrenergic drugs. Adrenoblockers. Sympatholytics.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
7	Pharmacology of narcotic analgesics. Pharmacology of non-narcotic analgesics. Modern principles of chronic pain treatment.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
8	Hypnotics, antiepileptics, antiparkinsonian drugs.	2	story-explanation, conversation, simulation of situations	oral examination (individual and frontal); written survey; test control
9	Neuroleptics, tranquilizers, sedatives.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control

10	Drugs which have stimulant influence on the CNS.	2	story-explanation, conversation, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
11	Drugs used to treat ischemic heart disease. Antiarrhythmic drugs.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
12	Hypertensive and antihypertensive drugs. Diuretics.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
13	Drugs that affect the respiratory system.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
14	Drugs that affect function of the digestive system: drugs affecting appetite, gastric secretion and motility. Antacids. Gastroprotectors. Drugs used in disorders of excretory function of the pancreas, hepatoprotective agents, cholagogues, agents that affect intestinal motility.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
15	Drugs that affect the blood system.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
16	Hormonal drugs of protein, peptide and steroid structure.	2	story-explanation, conversation, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
17	Anti-inflammatory and antiallergic drugs.	2	story-explanation, conversation, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
18	Antiseptic and disinfectant drugs.	2	story-explanation, conversation, lecture, presentation,	oral examination (individual and frontal); written survey; test control

			simulation of situations	
19	Antibiotics.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
20	Sulfanilamide drugs. Antimicrobials of different chemical structure.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
21	Pharmacology of antimycobacterial drugs. Pharmacology of antiviral drugs. Antifungal preparations.	2	story-explanation, conversation, lecture, simulation of situations	oral examination (individual and frontal); written survey; test control
22	Principles of acute poisoning treatment. Antidotes. Final control.	2	story-explanation, conversation, lecture, presentation, simulation of situations	oral examination (individual and frontal); written survey; test control
<b>Total hours of practical classes</b>		<b>44</b>		

#### 2.1.4. Laboratory classes

Not provided for by the academic component program.

#### 2.1.5. Self-work

№	Name of the topic	Number of hours	Teaching methods	Forms of control
1	Dosage forms, means, drugs. State Pharmacopeia. Basic terms and concepts of medicinal products in the pharmaceutical sector. Recipe. Rules for prescribing and dispensing medicines. Permissible reductions in the recipe.	5	story-explanation, conversation	oral examination (individual and frontal); written survey
2	Biotransformation and drug interaction.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
3	Side effects of drugs. Drug addiction and its social significance.	4	story-explanation, conversation	oral examination (individual and frontal); written survey
4	Toxicology of nicotine. Ways to combat tobacco smoking. H-cholinomimetics.	2	story-explanation, conversation	oral examination (individual and frontal); written survey



5	Dopaminotropic, histaminotropic and GABAergic agents	4	story-explanation, conversation	oral examination (individual and frontal); written survey
6	Pharmacology and toxicology of ethyl alcohol and drugs for the treatment of alcoholism.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
7	Pharmacology of sedative drugs.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
8	Pharmacology of adaptogens and actoprotective agents.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
9	Pharmacology of nootropic drugs. Analeptics.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
10	Drugs used to treat cardiac insufficiency. Hypolipidemic drugs.	4	story-explanation, conversation	oral examination (individual and frontal); written survey
11	Phytotherapeutic diuretics and urolithiasis.	4	story-explanation, conversation	oral examination (individual and frontal); written survey
12	Pharmacology of drugs that affect the myometrium.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
13	Pharmacology of antidiarrheal drugs. Probiotics. Prokinetics. Drugs to treat obesity and anorexia.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
14	Phlebotropic drugs. Venodilators, vasoconstrictors, veins protectors. Venous sclerotherapy, local treatment for varicose veins of the lower extremities. Drugs used to treat and prevent venous thrombosis.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
15	Plasma replacement drugs, drugs containing components of human blood. Medicines for parenteral nutrition.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
16	Multivitamin preparations. Enzymes, coenzymes and enzyme inhibitors. Stress protectors. Radio protectors.	2	story-explanation, conversation	oral examination (individual and frontal); written survey

17	Preparations for the treatment and prevention of osteoporosis. Anabolic steroids. Contraceptives for internal use and implantation.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
18	Immunotropic drugs	2	story-explanation, conversation	oral examination (individual and frontal); written survey
19	Principles of rational combination of antibiotics. Antibiotics of the group of cyclic polypeptides, glycopeptides. Fusidic acid. Antibiotics for topical use.	6	story-explanation, conversation	oral examination (individual and frontal); written survey
20	Antimicrobial preparations of different chemical structures.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
21	Pharmacology of antiviral, antitubercular and anti spirochetal drugs.	2	story-explanation, conversation	oral examination (individual and frontal); written survey
22	Antiprotozoal drugs. Antimalarial preparations. Anthelmintic drugs.	4	story-explanation, conversation	oral examination (individual and frontal); written survey
23	Antitumor drugs of plant origin. Preparations of alkali and acids, alkali and alkaline earth metals.	4	story-explanation, conversation	oral examination (individual and frontal); written survey
<b>Total hours of student's self-work</b>		<b>65</b>		

### 3. EVALUATION CRITERIA.

**3.1** Assessment of education seekers (ES) is carried out in accordance with the "Instructions for evaluating the educational activities of education seekers at the Kharkiv National Medical University".

The current educational activity (CEA) of ES is controlled by the teacher of the academic group, applicants have to master each topic of the AC and grades are set using a 4-point (national) system.

The final score for CEA is determined as the arithmetic average of traditional grades for each topical lesson and final control (FC), rounded to 2 decimal characters and converted into a multi-point scale according to Table 1.

General educational activity (GEA) is the educational activity of the ES during the entire period of studying the AC (the subject is studied for 1 semester), practically, it is the same score an education seeker got for CEA. GEA is considered completed if the ES has completed all missed practical classes and lectures, and the average score for all FC topics is equal to 3 points or higher. The recalculation is carried out in accordance with table 1 (according to the "Instructions for evaluating the educational activity of education seekers of higher education at the Kharkiv National Medical University").

The minimum number of points that an ES must obtain for admission to the exam is 70 points.

Table 1

### Recalculation of the average score for current activities in a multi-point scale

4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale
5	120	4.45-4,49	107	3.91-3,94	94	3.37-3,4	81
4.95-4,99	119	4.41-4,44	106	3.87-3,9	93	3.33- 3,36	80
4.91-4,94	118	4.37-4,4	105	3.83- 3,86	92	3.29-3,32	79
4.87-4,9	117	4.33-4,36	104	3.79- 3,82	91	3.25-3,28	78
4.83-4,86	116	4.29-4,32	103	3.74-3,78	90	3.21-3,24	77
4.79-4,82	115	4.25- 4,28	102	3.7- 3,73	89	3.18-3,2	76
4.75-4,78	114	4.2- 4,24	101	3.66- 3,69	88	3.15- 3,17	75
4.7-4,74	113	4.16- 4,19	100	3.62- 3,65	87	3.13- 3,14	74
4.66-4,69	112	4.12- 4,15	99	3.58-3,61	86	3.1- 3,12	73
4.62-4,65	111	4.08- 4,11	98	3.54- 3,57	85	3.07- 3,09	72
4.58-4,61	110	4.04- 4,07	97	3.49- 3,53	84	3.04-3,06	71
4.54-4,57	109	3.99-4,03	96	3.45-3,48	83	3.0-3,03	70
4.5-4,53	108	3.95- 3,98	95	3.41-3,44	82	Less 3	Not enough

Academic component assessment (ACA) is a final control conducted after an education seeker has mastered the educational material on Pharmacology and medical prescription based on his performance of the relevant types of work in lectures, practical classes and self-work. The evaluation of the AC is carried out after the completion of the study of the subject in the form of an exam. Admission to the exam is considered to be a GEA score of 70 to 120 points.

The exam includes the following control elements:

1-4 theoretical questions covering general and special pharmacology on all topics of the AC (according to academic component program);

the 5th task for checking the acquisition of practical skills: contains three drugs for which prescriptions must be written (in the appropriate dosage form with the concentration or dose), ES have to indicate the pharmacological group, indications for use and side effects of those drugs.

Exam evaluation is carried out according to table 2 (table 7 according to the "Instructions for evaluating the educational activity of education seekers for higher education at KNMU").

Table 2

### Assessment of theoretical knowledge and practical skills, if they are presented in one ticket

Number of questions	«5»	«4»	«3»	Answer for tickets, which include theoretical and practical parts of the academic component	For each answer the education seeker receives from 10 to 16 points, which corresponds to: «5» - 16 points; «4» - 13 points; «3» - 10 points.
1	16	13	10		
2	16	13	10		
3	16	13	10		
4	16	13	10		
5	16	13	10		
	80	65	50		

The exam is evaluated from 50 to 80 points. The grade from the academic component is the sum of GEA points, individual tasks of the education seeker and the exam and is from 120 to 200 points.

ES who have fulfilled the requirements of the academic component program and were admitted to take the exam, but did not pass it or did not appear, receive a grade of Fx.

Education seekers who were not allowed to take the exam due to an insufficient number of GEA points receive an F grade.

After the semester control for the AC, the person responsible for the organization of educational and methodological work at the department or the teacher assigns the education seeker an appropriate assessment according to Table 3 (according to the "Instructions for evaluating the educational activity of education seekers of higher education at KNMU") in the individual study plan of the ES and fills out electronic information on success in the academic component.

Table 3

### Evaluation scale at KNMU

Score on a 200-point scale	Score on a scale ECTS	Score on a four-point (national) scale
180-200	A	EXCELLENT
160-179	B	GOOD
150-159	C	GOOD
130-149	D	SATISFACTORY
120-129	E	SATISFACTORY
less 120	F, Fx	UNSATISFACTORY

### 3.2. List of exam questions.

1. Definition of "Pharmacology", goals and objectives of pharmacology, the role of pharmacology among other medical and biological sciences.
2. Principles of finding new drugs. Modern technologies for creating new drugs. Synthesis of new drugs based on the study of the relationship between chemical structure and action of substances. Obtaining drugs from plant and animal raw materials. The importance of biotechnology in the development of medicines.
3. Principles of rational pharmacotherapy.
4. Recipe, its structure. General principles of prescribing and prescribing medicines, common abbreviations and designations in prescriptions. Forms of prescription forms. Official and main regulations. State Pharmacopeia. The concept of the rules of prescription and over-the-counter medication. Documents governing the circulation of medicines. Rules for storage and use of medicines. Concepts: dosage form, medicinal substance, medicinal product, medicinal raw material, biologically active food additive, homeopathic remedy.
5. Pharmacokinetics of drugs. Definition. Ways of introduction. Transport mechanisms. Factors that change the absorption of substances.
6. Adverse drug reactions, classification. Allergic and non-allergic toxic effects. The importance of genetic factors in the development of adverse effects. The concept of idiosyncrasy, mutagenicity and carcinogenicity. Drug addiction and addiction. Addictive drugs. Principles of drug therapy.
7. Adverse drug reactions, classification. Transplacental action of drugs. Embryotoxicity, teratogenicity and fetotoxicity. The risk of using drugs during pregnancy and breastfeeding. Classification of drugs by degree of risk.
8. Basic principles of treatment of acute poisoning. Restriction of absorption into the blood. Removal of toxic substances from the body. Elimination of the action of the absorbed toxic substance. Symptomatic therapy of poisoning. Prevention measures.
9. Classification of agents that affect afferent innervation. Local anesthetics . Classification. Mechanisms of action. Dependence of properties of local anesthetics on structure. Pharmacokinetics . Comparative characteristics of drugs, their use for different types of anesthesia. Toxic effects and measures for their prevention and treatment. Binders . Organic and inorganic. Principle of action. Indications for use. Enveloping means . Principle of action. Indications for use. Adsorbents . Principle of action. Indications for use. Use in the treatment of poisoning. Irritating means. Principle of action. Indications for use.
10. Classification of drugs that enhance transmission in cholinergic synapses. M- cholinomimetics . Mechanism of action. Pharmacological effects. Indications for use. Side effects. N - cholinomimetics . Mechanism of action. Pharmacological effects. Indications for use. Side effects. M, N - cholinomimetics. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Anticholinesterase drugs . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects.

Comparative characteristics of drugs. The main manifestations and treatment of poisoning. Drugs, presynaptic action .Mechanism of action. Pharmacological effects. Indications for use. Side effects.

11. Classification of drugs that inhibit transmission in cholinergic synapses. M-cholinoblockers . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. The main manifestations and treatment of poisoning. N-cholinoblockers . Ganglioblockers . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Drugs that block nerve - muscle transmission. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Curare-like antagonists. Means that reduce the release of acetylcholine . Mechanism of action. Pharmacological effects. Indications for use. Side effects.

12. Classification of drugs that enhance transmission in adrenergic synapses .  $\alpha$  ,  $\beta$  - and adrenomimetics . Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.  $\alpha$  - adrenomimetics . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.  $\beta$  - adrenomimetics . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Sympathomimetic and. Mechanism of action. Pharmacological effects. Indications for use. Side effects.

13. Classification of drugs that inhibit transmission in adrenergic synapses.  $\alpha$ - blockers . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.  $\beta$ - blockers . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.  $\alpha$ ,  $\beta$ - blockers . Mechanism of action. Pharmacological effects. Indications for use. Side effects.

14. Antihistamines. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

15. Remedies for anesthesia. Latitude of narcotic action. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Combined use of anesthetics. Premedication.

16. Ethyl alcohol. Resorptive and local action of ethyl alcohol. Application in medicine. Acute poisoning by ethyl alcohol, its treatment. Chronic poisoning by ethyl alcohol, principles of treatment.

17. Hypnotics. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Hypnotic intoxication, principles of pharmacotherapy. Benzodiazepine hypnotics.

18. Antiepileptic drugs. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

19. Antiparkinsonian drugs. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
20. Classification of analgesics, central action. Opioid analgesics. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Intoxication, principles of treatment. Opioid receptor antagonists. Drugs with mixed (opioid- non-opioid) action. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Differences from opioids. Inhibitors of cyclooxygenase central action. MoA. Pharmacological effects. Indications for use. Side effect. Activators of neuronal potassium channels. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Drugs of different pharmacological groups with analgesic activity. Mechanisms of analgesic action. Application.
21. Antipsychotics. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects, ways to correct them. Comparative characteristics of drugs. New groups of antidepressants (dopamine and norepinephrine reuptake inhibitors; selective norepinephrine and serotonin reuptake inhibitors; monoamine oxidase B inhibitors).
22. Antidepressants. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Remedies for mania. Mechanism of action. Pharmacological effects. Indications for use. Side effects.
23. Anxiolytics. Classification. MoA. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. The possibility of drug dependence. Sedatives. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
24. Psychostimulants. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. The possibility of drug dependence. Nootropics. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Analeptics. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects.
25. Respiratory stimulants. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Antitussives. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. The possibility of developing drug dependence and addiction. Expectorants. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
26. Classification of drugs used to treat bronchospasm and bronchial asthma. Broncholytic drugs. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative

characteristics of drugs. Means with anti-allergic, anti-inflammatory and bronchodilator activity . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects.

27. Remedies used in acute respiratory failure. Principles of action of drugs used to treat pulmonary edema. The choice of drugs depending on the pathogenetic mechanisms of its development. The use of narcotic analgesics, fast-acting diuretics. Application cardiotonic sulfur dstv others and pulmonary edema associated with heart failure. Anti-foaming effect of ethyl alcohol. Use of antihypertensive drugs. Oxygenotherapy. Respiratory distress syndrome. Medicinal s urfactants. Principle of action. Application.

28. Cardiotonic drugs. Cardiac glycosides . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Cardiac glycoside intoxication: clinical manifestations, prevention, treatment. Cardiotonic means non-glycosidic structures . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Principles of pharmacotherapy of chronic heart failure.

29. Drugs used to treat heart failure. Classification. Principles of therapy. Drugs influencing the renin angiotensin system; antagonists of vasopressin receptors, antagonists of endothelin receptors, selective antagonists of adenosine receptors.

30. Antiarrhythmic drugs. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

31. Remedies used in coronary heart disease. Classification. Means used for relief and prevention of angina attacks ( antianginal drugs). Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

32. Pharmacotherapy of myocardial infarction. The use of narcotic analgesics, neuroleptanalgesia , antiarrhythmics, drugs that normalize hemodynamics, antiplatelets , anticoagulants, fibrinolytics .

33. Means used in cerebrovascular disorders. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

34. Calcium channel blockers. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

35. Remedies used to treat migraines. Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

36. Antihypertensive drugs ( antihypertensive drugs). Classification. Neurotropic anti hypertensive drugs. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

37. Antihypertensive drugs ( antihypertensive drugs). Classification. Drugs that affect the renin- angiotensin system. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.



38. Antihypertensive drugs ( antihypertensive drugs). Classification. Myotropic drugs . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
39. Diuretics. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Principles of drug combination.
40. Means that affect appetite . Classification. Stimulating effect of bitterness. Indications for use. Means used for obesity. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
41. Means used in dysfunction of the gastric glands. Means that stimulate the secretion of gastric glands. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Means that reduce the secretion of gastric glands . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effect. Comparative characteristics of drugs. Gastroprotectors . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effect. Comparative characteristics of drugs. Antacids means . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Modern combined antacids .
42. Medications that are used at dysbacteriosis. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
43. Vomiting and antiemetics. Vomiting agents . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Means from . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Means to prevent vomiting during chemotherapy of tumors.
44. Chologogues. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Means that help dissolve gallstones. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
45. Hepatoprotectors . Classification. MoA. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
46. Means of replacement therapy in case of insufficient excretory function of the pancreas (enzyme preparations). Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
47. Agents affecting the motility of the gastrointestinal tract. Agents that suppress motility of the gastrointestinal tract . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Means that enhance motility of the gastrointestinal tract . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.
48. Laxatives . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

49. Means that affect the tone and contractile activity of the myometrium . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Horn alkaloid poisoning.

50. Drugs that affect the blood system. Agents affecting erythropoiesis . Means that stimulate erythropoiesis . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Means affecting leukopoiesis . Means that stimulate leukopoiesis . Mechanism of action. Pharmacological effects. Indications for use.

51. Means used for the prevention and treatment of thrombosis. Classification. Antiplatelet agents . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

52. Means used for the prevention and treatment of thrombosis. Classification. Anticoagulants . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

53. Means used for the prevention and treatment of thrombosis. Classification. Fibrinolytics . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs.

54. Means that help stop bleeding. Classification. Hemostatics . Classification. Mechanism of action. Pharmacological effects. Indications for use. Side effect. Comparative characteristics of drugs. Antifibrinolytics . Classification. MoA. Pharmacological effects. Indications for use. Side effects. Comparative characteristics of drugs. Agents that stimulate platelet aggregation and adhesion .

55. Preparations of hormones of the hypothalamus and pituitary gland. Classification. Preparations of hypothalamic hormones. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Preparations of hormones of the anterior pituitary gland . Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Preparations of hormones of the posterior pituitary gland . Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Epiphyseal hormone preparations . Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Inhibitors of pituitary hormone secretion . Mechanisms of action. Indications for use. Side effects.

56. Thyroid hormone preparations . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Antithyroid drugs . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Parathyroid hormone preparations . Mechanisms of action. Pharmacological effects. Indications for use. Side effects.

57. Insulin preparations . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. With inteticheskie hypoglycemic drugs . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. New groups of drugs for the treatment of type 2 diabetes mellitus (incretin mimetics , DPP-4 inhibitors).
58. Ovarian hormone preparations are estrogenic and progestogenic drugs . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Antiestrogenic and antigestagen drugs . Mechanisms of action. Indications for use. Side effects.
59. Hormonal contraceptives. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
60. Preparations of male sex hormones (androgenic preparations). Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Drugs with antiandrogenic action. Classification. Mechanisms of action. Indications for use. Side effects. Anabolic steroids . Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
61. Preparations of hormones of the cortex of the adrenal glands. Classification. Mineralocorticoid preparations . Mechanisms of action. Indications for use. Side effect. Glucocorticoid drugs . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
62. Vitamin preparations. Classification. Preparations of water-soluble vitamins . Mechanisms of action. Indications for use. Side effects. Preparations of fat-soluble vitamins. Mechanisms of action. Indications for use. Side effects. Multivitamin complexes . Features of application.
63. Antiatherosclerotic drugs. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects. Statins . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
64. Gout remedies. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
65. Anti - inflammatory drugs. Classification. Steroid anti-inflammatory drugs. Classification. Mechanisms of anti-inflammatory action. Application. Side effect. Nonsteroidal anti-inflammatory drugs . Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
66. Means that affect the immune process. Classification of immunotropic drugs. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
67. Means that affect the immune process. Classification of antiallergic drugs. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.
68. Antiseptics and disinfectants . Definition. Classification. Mechanisms of action. Pharmacological effects. Indications for use. Side effects.

## 69. Classification

of chemotherapeutic agents. Antibiotics . Classification. Mechanisms of action of antibiotics. The concept of bactericidal and bacteriostatic action. The concept of basic and backup antibiotics. Complications during antibiotic therapy, prevention, treatment. Mechanisms of antibiotic resistance .

70. Beta- lactam antibiotics. Classification. Penicillin antibiotics . Classification. The range of action of different groups. Mechanisms of action. Indications for use. Side effects. Combined preparations of semi-synthetic penicillins with  $\beta$ - lactamase inhibitors . Cephalosporins . Classification. Mechanism of action. Spectrum of action. Indications for use. Side effects. Unconventional beta- lactam antibiotics . Classification. Carbapenems . Mechanism of action. Spectrum of action. Indications for use. Side effects. Combination with dipeptidase inhibitors . Monobactams . Mechanism of action. Spectrum of action. Indications for use. Side effects.

71. Macrolides and azalides . Classification. Spectrum of action. Mechanism of action. Indications for use. Side effects. Tetracyclines . Classification. Spectrum of action. Mechanism of action. Indications for use. Side effects. Phenicols . Spectrum of action. Mechanism of action. Indications for use. Side effects. Aminoglycosides . Classification. Spectrum of action. Mechanism of action. Indications for use. Side effects.

72. Polymyxins . Spectrum of action. Mechanism of action. Indications for use. Side effects. Lincosamides . Spectrum of action. Mechanism of action. Indications for use. Side effects. Glycopeptides . Spectrum of action. Mechanism of action. Indications for use. Side effects. Fucidin . Spectrum of action. Mechanism of action. Indications for use. Side effects. Antibiotics of different chemical groups . Features and indications for use.

73. Synthetic antimicrobials. Classification. Sulfanilamide drugs . Classification. Spectrum of action. Mechanism of action. Indications for use. Side effects. Combined use of sulfonamides with trimethoprim . Derivatives of 8-oxyquinoline, nitrofurans , quinoxaline . Spectra of antimicrobial activity. Mechanism of action. Indications for use. Side effects.

74. Synthetic antimicrobials . Classification. Quinolone derivatives . Classification. F torchinolones . Classification. Spectrum of action. Mechanism of action. Indications for use. Side effects. Derivatives of 5-nitroimidazole, thiosemicarbazone , oxazolidinones . Spectra of antimicrobial activity. Mechanism of action. Indications for use. Side effects.

75. Antisyphilitic drugs. Classification. Mechanism of action. Indications for use. Side effects.

76. Anti-tuberculosis drugs. Classification. Mechanism of action. Side effects. Principles of chemotherapy for tuberculosis.

77. Antiviral drugs. Classification by application. Spectrum of action. Mechanism of action. Indications for use. Side effects.

78. Antiprotozoal agents. Classification. Means for the prevention and treatment of malaria . Classification. The effect of drugs on various forms and stages of

development of *Plasmodium falciparum*. Principles of using antimalarial drugs. Side effects. Remedies for the treatment of amebiasis . Classification. Indications for use of drugs. Side effects. Means used in giardiasis . Application, side effects. Remedies used for trichomoniasis . Side effects. Remedies used in toxoplasmosis. Side effects. Means, at change at a balantidiasis. Side effects. Remedies used in leishmaniasis. The use of drugs for the treatment of visceral and cutaneous leishmaniasis. Side effects. Remedies used in trypanosomiasis . The effectiveness of drugs against different types of trypanosomes. Side effects.

79. Antifungal drugs. Classification. Mechanism of action. Side effects. Indications for use.

80. Anthelmintic (anthelmintic) agents. Classification. Mechanism of action. Side effects. Indications for use.

81. Antitumor (anti blastoma) drugs. Approaches and general patterns of tumor treatment. Resistance to chemotherapeutic agents. Classification. Mechanism of action. Side effects. Indications for use. Complications of chemotherapy of tumors, their prevention and treatment.

82. Principles of treatment of acute poisoning by drugs and poisons. Antidote Therapy, use of functional antagonists.

### 3.3. Control questions.

1. The concept of medicinal substance, medicinal drug. Forms of medicines.
2. Rules for storage of medicinal products.
3. The general structure of the recipe. Prescription forms.
4. Methods of administration of medicinal products. The influence of the route of administration on the speed, strength, and duration of the therapeutic effect.
5. Types of action of medicinal preparations.
6. Factors modifying the effect of therapeutic agents.
7. Dose. Types of doses. Dependence of the effect of therapeutic agents on the dose.
8. Peculiarities of the effect of therapeutic agents upon repeated administration: addiction, dependence on therapeutic drugs, tachyphylaxis. Cumulation.
9. Types of side effects of drugs on the body.
10. Combined use of drugs. The concept of synergism and antagonism.
11. Mechanism of action and application of local anesthetics.
12. Indications and method of application of irritant preparations. Mechanism of action.
13. Mechanism of action and application of astringents.
14. Mechanism of action of adsorbents. Indications for use.
15. M-Cholinomimetic agents (aceclidine, pilocarpine hydrochloride). Action. Application. Side effects, their correction.
16. Indications for the appointment of atropine sulfate. The mechanism of its action. Side effects.
17. Classification of adrenomimetic agents. The main effects of their action. Application.

18. Effect and use of ethyl alcohol.
19. First aid for acute poisoning with ethyl alcohol, hypnotics.
20. Action and use of narcotic analgesics. Side effects, their correction.
21. Pharmacotherapeutic effects of non-narcotic analgesics. The difference in indications for prescribing narcotic and non-narcotic analgesics.
22. Psychotropic drugs. Division into groups. Peculiarities of action and application of particular groups of drugs.
23. Bromism: signs and prevention of bromism.
24. Respiratory stimulants. Drugs. Mechanism of action. Application.
25. Antitussives. Action. Application.
26. Expectorants. Mechanism of action. Application.
27. Broncholytic agents. Action. Application.
28. Cardiotonic drugs. Pharmacological action. Application. Side effects.
29. Antianginal drugs. Application for relief of angina attacks.
30. Antihypertensive drugs. Division into groups. Drugs. Action.
31. Means used for insufficient secretion of gastric juice.
32. Means used for increased secretion of gastric juice.
33. The use of magnesium sulfate as a choleric and laxative agent.
34. Stimulators of erythro- and leukopoiesis. Drugs. Application.
35. Coagulants. Indications for use. Ways of introduction.
36. Anticoagulants. Indications for use. Application.
37. Medicines affecting fibrinolysis. Action. Application.
38. Glucocorticoids. Healing properties. Appointment. Application.
39. Insulin. Effect on carbohydrate metabolism. Emergency care for hypoglycemic and hyperglycemic coma.
40. Vitamins. Classification. Indications for use. Side effects.
41. Classification of antimicrobial agents. Differences between particular groups.
42. A group of halogens. Drugs. Mechanism of action. Application.
43. A group of dyes. Features of action and application.
44. Medicinal substances that give oxygen. Mechanism of action. Application.
45. Detergents. Drugs. Main properties. Application.
46. Salts of heavy metals. Main properties. Application.
47. Poisoning by salts of heavy metals. Emergency medical care. Use of antidotes.
48. Chemotherapeutic agents. Characteristic. Classification. Features of application.
49. Antibiotics. General characteristics. Classification by origin, type, spectrum of action and clinical application. Side effects.
50. Anthelmintics. Application.
51. Principles of emergency care for acute drug poisoning.
52. Removal of toxic substances from the body and prevention of their absorption.

53. Measures to accelerate the removal of toxic substances from the body (hemodialysis, forced diuresis, haemosorption).

### **3.4. Individual task**

1. Participation in conducting experimental research in the performance of research work of the department - 10 points.

2. Report at the scientific conference "Medicine of the 3rd millennium" - 2 points.

3. Report at the scientific conference "ISIC" - 3 points.

Points for individual tasks are awarded to the education seeker only on a commission basis (commission - head of the department, head teacher, group teacher) only if they are successfully completed and defended. In no case may the total amount of points exceed 120 points.

### **3.5. Rules for appealing the assessment**

The assessment is carried out in accordance with the "Regulations on the appeal of the results of the final control of education seekers of KNMU" № 35/2020.

Appeal of the results of the final control (hereinafter - FC) of knowledge of education seekers is part of the organizational support of the educational process. ES have the right to appeal the final grade obtained from the AC.

When considering an application for a FC, which was conducted in writing, repeated or additional questioning of the education seeker by the Appeals Commission is prohibited. The Appeals Commission reviews and analyzes the written work guided by the evaluation criteria of the EC.

When considering an application for a FC, which was made orally, the education seeker, by decision of the Appeals Commission, may be given the opportunity to re-compile the FC during the meeting of the Appeals Commission for a new ticket, from a set of tickets for the AC. For the sake of objectivity and transparency, the ticket for which the education seeker first took the FC is removed from the set.

Decisions of the appeal commission are made by a majority vote of the general membership of the commission. In case of different numbers of votes "for" and "against" the decision which is supported by the ready commission is accepted.

The result of consideration of the application is the adoption by the Appeals Commission of one of two decisions:

- preliminary assessment of the education seekers knowledge on the FC corresponds to the level of quality of his knowledge in this EC and does not change;

- preliminary assessment of the education seeker knowledge on the FC does not correspond to the level of quality of his knowledge in this AC and deserves a different assessment (indicate a new assessment in accordance with the current scale of evaluation of FC results), but not lower than obtained on the FC for which the application is submitted.

## **4. ACADEMIC COMPONENT POLICY**

### **Course requirements**

It is expected that education seekers will be present (in person or, in the case of

distance learning, online) in all lectures and practical classes according to the schedule at the Department of Pharmacology and Medical Prescription. Late for both lectures and practical classes are not allowed. In the case of full-time classes, education seekers must be dressed in white coats. If education seekers missed classes, they must complete it (in person or, in the case of distance learning, online) according to the schedule on the information stand of the department and on the page of the department in the Moodle system.

Written and homework must be completed completely and on time, if education seekers have questions, you can contact the teacher in person or by the contacts provided on the department's page in the Moodle system.

During the lecture, applicants are recommended to keep a synopsis of the lesson and keep a sufficient level of silence. Asking questions to the lecturer is perfectly normal.

During the practical lesson, education seekers should take an active part in the discussion and detailed analysis of the material in the classroom (or in the virtual classroom), ask questions, express their views, and discuss. During the discussion it is important:

- respect for colleagues,
- tolerance for others and their experience,
- receptivity and impartiality,
- the ability to disagree with the opinion, but to respect the personality of the opponent/s,
- careful argumentation of his opinion and the courage to change his position under the influence of evidence,
- mandatory acquaintance with primary sources.

Education seekers are expected to be interested in participating in city, national and international conferences, competitions and other events in the subject profile.

The use of electronic gadgets during lectures or practical classes face-to-face is allowed only in case of emergency (except when teaching methods require their direct use).

### **Occupational Health**

The first lesson of the course will explain basic principles of occupational Safety and Health by conducting appropriate training. It is expected that everyone should know where the nearest evacuation exit is, where the fire extinguisher is, how to use it, and so on.

### **Behavior in the audience**

It is important for educational seekers to follow the rules of good behavior at the university. These rules are common to all, they also apply to all faculty and staff, and are not fundamentally different from the generally accepted norms.

During classes it is allowed:

- leave the audience for a short time if necessary and with the permission of the teacher;
- drink soft drinks;
- take photos of presentation slides;



- take an active part in the class

Forbidden:

- eating (except for persons whose special medical condition requires another - in this case, medical confirmation is required);
- smoking, drinking alcohol and even low-alcohol beverages or drugs;
- use obscene language or use words that offend the honor and dignity of colleagues and faculty;
- gambling;
- damage the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter the premises and territories);
- shouting, shouting or listening to loud music in classrooms and even in corridors during classes.

## 5. ACADEMIC INTEGRITY

**The Department of Pharmacology and prescription maintains zero tolerance for plagiarism.** Education seekers are expected to continually raise their awareness of academic writing. The first lessons will provide information on what to consider plagiarism and how to properly conduct research and scientific research.

Observance of academic integrity by pedagogical, scientific-pedagogical and scientific workers provides:

- objective and impartial assessment of knowledge and skills of ES (graduates);
- compliance with the rules of reference to sources of information in the case of borrowing ideas, statements, writing methodological materials, scientific papers, etc .;
- monitoring the observance of academic integrity by ES for higher education;
- compliance with the law on copyright and related rights;
- informing higher education seekers about the main criteria for detecting plagiarism and responsibility for its use;
- conducting activities among education seekers to prevent cases of plagiarism.
- providing reliable information about research methods and results, sources of information used and own pedagogical (scientific-pedagogical, creative) activities;

The academic integrity of higher education seekers includes:

- use in teaching or research activities only verified and reliable sources of information and refer to them correctly;
- compliance with the rules of reference to sources of information in the case of borrowing ideas, statements, writing methodological materials, scientific papers, etc .;
- independent performance of educational tasks, tasks of current and final control of learning outcomes (for persons with special educational needs this requirement is applied taking into account their individual needs and opportunities);
- compliance with the law on copyright and related rights;
- providing reliable information about the results of their own educational (scientific, creative) activities, used research methods and sources of information.

## 6. RECOMMENDED BOOKS

### Basic

1. Pharmacology (Фармакологія : підручник для англ. студ. мед. закладів вищої освіти : [англ. мовою]) / I. B. Samura, I. F. Belenichev, A. V. Nerush ; Zaporizhzhya State Medical University. – Vinnytsia : Nova Knyha, 2020. – 632 p.
2. Karen Whalen Lippincott Illustrated Reviews. – 7<sup>th</sup> edition. – Wolters Kluwer, 2019. – 576 p.
3. KD Tripathi Essentials of Medical Pharmacology. – 8<sup>th</sup> edition. – Jaypee brothers medical publishers, 2019. – 1064 p.

### Auxiliary

1. Rang & Dale's Pharmacology. – 8<sup>th</sup> edition. – ELSEVIER Churchill Livingstone, 2016. – 759 p.
2. Pharmacology: a textbook / Viktor M. Bobyrov, Tetyana O. Devyatkina, Olena M. Vazhnicha, Vadim M. Khristyuk – Vinnytsia: NOVA KNYHA Publishers, 2010.-520 p.
3. Rosenfeld, Gary C. Pharmacology / Gary C. Rosenfeld, David S. Loose. — 6th ed. – Lippincott Williams & Wilkins, 2014. – 376 p.

## 7. INFORMATION RESOURCES

1. Access Medicine <https://accessmedicine.mhmedical.com/index.aspx>
2. Science Direct <https://www.sciencedirect.com/>
3. Library of KhNMU  
<http://libr.knmu.edu.ua/index.php/11-na-glavnoj/956-khnmu-nadano-dostup-do-resursiv-mcgraw-hill>
4. Clinical case-based resource <https://www.capsule.ac.uk/>
5. Speaking clinically <https://speakingclinically.co.uk/>
6. Linda Hall Library <https://www.lindahall.org/>