

MINISTRY OF HEALTH OF UKRAINE  
KHARKIV NATIONAL MEDICAL UNIVERSITY  
Department of Clinical Pharmacology and Internal Medicine

Academic year 2021-2022

**SYLLABUS OF EDUCATIONAL COURSE  
«SIDE EFFECTS OF DRUGS»**

Elective component

Form of education: full-time, distance, mixed

Branch of knowledge 22 "Health Protection"

Speciality 222 "Medicine"

Educational program for education of specialists of the second (master's)  
level of higher education course

Course of education- 3

Syllabus of the academic discipline was  
approved at the meeting of the Depart-  
ment of Clinical Pharmacology and In-  
ternal Medicine

Approved by the KhNMU Methodolo-  
cal Commission on the therapeutic di-  
sciplines

Protocol from  
"27" August 2021 No. 1

Protocol from  
"31" August 2021 No. 1

The head of the Department of Clinical  
Pharmacology and Internal Medicine

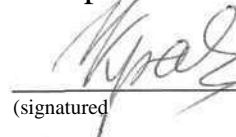
The head of the Methodological Com-  
mittee of the KhNMU on the therapei-  
disciplines



(signature)

prof. Knyazkova I.I.

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Consultations	According to the schedule of the educational department

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Full-time consultations schedule and place according to the schedule of the department.

On-line consultations, schedule and place by prior arrangement with the teacher.

**Location: classes are held on the base of the polyclinic** Government Institution “L.T. Malaya Therapy National Institute of the National Academy of Medical Sciences of Ukraine” (GI "L.T.Mala NIT NAMSU") (**Lyubov Malaya Avenue, 2A, Kharkiv, Kharkiv region, 61039**)

## INTRODUCTION

The syllabus of the discipline "Clinical Pharmacology" is compiled in accordance with the educational-professional program (hereinafter - EPP) 222 "Medicine" and the Standard of Higher Education of Ukraine (hereinafter - the Standard), the second (master's) level, field of knowledge 22 "Health Protection".

The program of the course determines the prerequisites for access to learning, orientation and the main focus of the program, the amount of ECTS credits required to obtain an educational master's degree, a list of general and special (professional) competencies, the normative and variable content of specialist training, formulated in terms of learning outcomes and control requirements quality of higher education.

The department accepts qualified students of any race, national or ethnic origin, gender, age, persons with special needs, any religion, sexual orientation, gender identity, veteran status or marital status for all rights, privileges, programs and activities provided to university students.

### **Description of the discipline (abstract).**

The course "Side effects of drugs" for 3-d year students involves students gaining in-depth knowledge of theory and practice on the principles of safe use of drugs, taking into account possible side effects. Significant advances in clinical pharmacology and pharmacotherapy have not only significantly expanded the arsenal of drugs, but have necessitated a more in-depth analysis of the causes and study of the mechanisms of adverse reactions. According to the WHO "adverse reaction" is defined as an undesirable, harmful to the human body reaction that occurs when using drugs in the usual doses for prevention, diagnosis and treatment. Depending of country from 3 to 15% of all amount of patients visits are due to complications of pharmacotherapy. Mortality from adverse reactions ranks fifth in the world after diseases of the cardiovascular system, lungs, cancer and injuries. Therefore, a good understanding of the principles of prevention of side effects of prescriptions is extremely important for the future doctor.

**Discipline status:** the main format of the discipline is mixed - the course, which is supported in the Moodle system, teaching the course, provides for a combination of traditional forms of classroom studding with elements of distance studding, which uses available information interactive technologies (ZOOM, Moodle, Google Meet, Google Teams), resident and correspondence counseling.

**The subject** of the discipline is the side effects that occur when using drugs in the usual doses for the prevention, diagnosis and treatment of diseases: mechanisms of adverse reactions, typical manifestations, atypical manifestations, prevention and care measures.

### **Interdisciplinary links:**

Study of the elective course "Side effects of drugs":

a) is based on the study of Latin, ethics, philosophy, ecology, medical biology, medical chemistry, biological and bioorganic chemistry, biophysics, human

anatomy, pathological anatomy, physiology, pathological physiology, microbiology, pharmacology and integrates with these disciplines;

b) lays the foundations for students to study clinical pharmacy and pharmacotherapy and the formation of skills to apply knowledge of pharmacology and care measures.

**Prerequisites** "Side effects of drugs": medical and biological physics, chemistry, biological chemistry, general and clinical pharmacology, internal medicine.

**Postrequisites** "Side effects of drugs": internal medicine, including cardiology (diseases of internal organs, cardiovascular system), immunology (connective tissue diseases, vasculitis), infectious diseases, neonatology (embryotoxicity), social medicine.

**Link from the page of educational course in Moodle:** <http://distance.KhNMU.edu.ua/course/view.php?id=4038>

## **1. The aim of teaching the discipline.**

**1.1. The aim** of teaching the discipline "Side effects of drugs" for 3-d year students is to provide future professionals with scientifically sound knowledge of the basics of clinical and general pharmacology and the necessary practical skills in the qualification of Master of Medicine, doctor.

**1.2 The main tasks of the discipline "Side effects of drugs"** are the formation of a system of knowledge, professional skills, research and innovation and practical skills in choosing safe pharmacotherapy, prevent possible side effects pharmacological treatment, urgent aid from patients with complications of pharmacotherapy and understanding the reporting algorithm in case of adverse reactions.

- to teach students to be guided in features of functioning of system of pharmacovigilance in Ukraine and the world, in normative documents on pharmacovigilance.
- learn to create an algorithm for recording adverse reactions / lack of efficacy on the drug.
- learn to analyze the cause-and-effect relationship of an adverse reaction.
- to master the skills of the methodology of choosing the optimal drug for a particular patient, taking into account concomitant drugs and concomitant pathology of the patient.
- master the methods of assessing the effectiveness and safety of drugs, drug monitoring, pharmacogenetics research and drug interaction.
- be able to analyze and predict the development of side effects of drugs and make appropriate adjustments.
- learn to develop rational combinations in the conduct of modern pharmacotherapy, taking into account the interaction of drugs.

- learn to optimize the methods of pharmacotherapy and disease prevention in different groups of patients, taking into account their individual characteristics.
- master the concepts of the importance of the pharmacovigilance system in Ukraine and the world, the importance of registration and reporting of adverse drug reactions / NSAIDs.
- know the concept of strategies for innovative developments in pharmacology and pharmacy to eliminate unwanted side effects of drugs.

**1.3. Competences and learning outcomes**, the formation of which is facilitated by the discipline (relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the Standard).

**1.3.1** The study of the discipline provides students with the acquisition of **competencies**:

**Integral competencies:**

The ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or in the learning process, involves research and(or) implementation of innovations and is characterized by the complexity and uncertainty of conditions and requirements. The ability of an individual to organize an integral humanitarian educational space, to form a single image of culture or a holistic picture of the world.

**General competences (GC):**

GC1 – Capacity for abstract thinking, analysis and synthesis; ability to study and be modernly trained

GC2 – Capacity for using knowledge in practical situations

GC3 – Knowledge and understanding of the subject field and understanding of the professional activity

GC4 – Capacity for adapting and acting in a new situation

GC5 – Capacities for making sound judgements and for working in a team; skills of interpersonal interaction

GC7 – Skills of using informative and communicative technologies

GC8 – Certitude and persistence concerning set tasks and assumed responsibilities

GC9 – Capacity for acting in the socially responsible and conscious way

**Professional competences (PC)**

PC5 – Capacity for determining the principles and character of treatment of diseases

PC6 – Capacity for diagnosing medical emergencies

PC14 – Capacity for keeping medical documents

### **1.3.2 The study of the discipline ensures that students acquire the following program learning outcomes**

PRT 1 – to have general and special fundamental and profession-oriented knowledge, abilities, skills and competences required for carrying out typical professional tasks, which are associated with activity in the medical field in a particular position

PRT 3 – to apply the acquired knowledge, skills and understanding for performing typical tasks in the doctor's activity, whose sphere of use is determined by lists of syndromes, signs and symptoms, diseases, medical emergencies, laboratory and instrumental methods of examination, medical manipulations

PRT 7 – to determine the character and principles of treatment of diseases

PRT 10 – to diagnose medical emergencies, determine tactics for provision of emergency medical aid

PRT 17 – be able to keep medical documents and processing state, social and medical information

PRT 20 – to apply the acquired knowledge about the current system of health care for optimization of one's own professional activity and participation in performing practical tasks in the field

### **1.3.3. The study of the discipline provides students with the following social skills (soft skills):**

- ability to abstract thinking, analysis and synthesis;
- ability to learn and master modern knowledge;
- ability to apply knowledge in practical situations;
- knowledge and understanding of the subject area and understanding of professional activity;
- ability to adapt and act in a new situation;
- ability to make informed decisions;
- ability to work in a team; interpersonal skills;
- ability to communicate in the state language both orally and in writing;
- ability to communicate in a foreign language; skills of using information and communication technologies; determination and persistence in terms of tasks and responsibilities;
- ability to act socially responsibly and consciously; the desire to preserve the environment;
- ability to act on the basis of ethical considerations (motives).

## 2. Information about educational course.

Name of indices	Branch of knowledge, direction of training, educational-qualification level	Characteristics of the course	
		Day tuition	
Number of credits – 3	Direction of training 22 «Health Protection»	Elective course	
Total number of hours - 90	Specialty 222 «Medicine»	<b>Year of study:</b>	
		3-th	
		<b>Term</b>	
		5-th	6-th
Number of hours for day tuition: Practical classes – 10, Lectures – 10, Independent work - 70	Educational-qualification level: «second (master’s) level»	<b>Lectures</b>	
		10 hours	
		<b>Practical classes</b>	
		10 hours	
		<b>Independent work</b>	
		70 hours	
Type of control: Credit			

### 2.2.1 Lectures

#### Lecture topics

№	Lectures topic	Hours	Types of lectures
1	Lecture 1. Side effects of drugs. Terminology. Pharmacological supervision in Ukraine. Features of prevention	2	Presentation
2	Lecture 2. Hepatotoxicity of drugs	2	Presentation
	Lecture 3 Hematotoxicity of drugs	2	Presentation
3	Lecture 4. Current issues of antibiotic therapy	2	Presentation
4	Lecture 5. Nephrotoxicity of drugs	2	Presentation
Total for lectures		10	

2.2.2 Seminars- not provided by the program.

### 2.2.3 Practical classes



### Topics of practical classes

№	The topic practical lesson	Hours	Education methods	Methods of control
1.	<p>Topic 1. The system of pharmacovigilance in the world. The procedure for pharmacovigilance in Ukraine</p> <p>Topic 2. The problem of control over the safety of medicines (international and domestic experience). Automated pharmacovigilance information system</p>	2	story-explanation, conversation, illustration, demonstration, presentation, videos, educational video films discussion	oral examination (individual and frontal); written survey; test control; creative tasks
2	<p>Topic 3. Classifications and mechanisms of side effects of drugs. The main ways to prevent side effects of drugs</p> <p>Topic 4. Adverse reactions to drugs that affect the gastrointestinal tract and metabolism. Hepatotoxicity.</p>	2	story-explanation, conversation, illustration, demonstration, presentation, videos, educational video films discussion	oral examination (individual and frontal); written survey; test control; creative tasks
3	<p>Topic 5. Side effects of antiplatelet and anticoagulant therapy in diseases of the cardiovascular system. Hematotoxicity</p> <p>Topic 6. Side effects of lipid-lowering drugs and drugs that affect the reduction of blood pressure.</p>	2	story-explanation, conversation, illustration, demonstration, presentation, videos, educational video films discussion	oral examination (individual and frontal); written survey; test control; creative tasks
4	<p>Topic 7. Side effects of antibiotics. Antibiotic resistance.</p> <p>Topic 8 Side effects of nonsteroidal and steroidal anti-inflammatory drugs</p>	2	story-explanation, conversation, illustration, demonstration, presentation, videos, educational video films discussion	oral examination (individual and frontal); written survey; test control; creative tasks
5	<p>Topic 9 Nephrotoxicity. Innovations in pharmacology. Credit.</p>	2	story-explanation,	oral examination (individual and

			conversation, illustration, demonstration, presentation, videos, educational video films discussion	frontal); written survey; test control; creative tasks
	Total for practical classes	10		

### 2.2.5 Independent work of students:

#### Independent work of students:

№	The topic independent work of students	Hours		
1.	Topic 1. Pharmacokinetics of drugs, definitions, stages. Side effect of drug definition.	10	Working with literature, viewing presentations, listening to lectures	Abstracts
2	Topic 2. Side effects of bronchodilators - $\beta$ -agonists, M-cholinoblockers. Side effects of bronchodilators - mucolytics, antitussives, expectorants.	10	Working with literature, viewing presentations, listening to lectures	Preparation of presentations, reports
3	Preparation for practical classes.	50	Work with literature and Internet resources	Oral questioning, test control, creative tasks in practical classes
	Total for independent work of students	70		

#### Individual tasks

1	Report of the abstract in a practical lesson
2	Report at clinical conferences of the bases of the department
3	Report of medical history in a practical lesson
4	Writing abstracts, articles

### **Topics for reports(examples).**

1. Functioning of the electronic resource of the State Expert Center of the Ministry of Health of Ukraine. Drug safety signals.
2. Possibilities of the Automated Information System on Pharmacovigilance (AISF)
3. Influence on the development of adverse reactions of individual characteristics of the organism, pregnancy, age, sex.
4. Pharmacogenetics: historical aspects and future prospects. Problems of personalized medicine.
5. Interaction of drugs: types, manifestations. Interaction of medicinal substances with food.
6. Side effects of drugs that affect the gastrointestinal tract and respiration.
7. Side effects of drugs used to treat diseases of the cardiovascular system.
8. Side effects of vitamin preparations. Dietary supplements.

## **3. Assessment Policy**

**3.1 Current training activity.** Evaluation of the success of education of students is carried out on the basis of the current "Instructions for evaluating the educational activities of students of KHNMU"

Teachers shall ensure that each master receives the necessary competences in the areas covered by the practical classes. Mastering the topic (current control) is controlled by practical lessons according to specific goals, tests, solution of situational tasks, control of the acquisition of practical skills.

When assessing the mastering of each discipline subject (current training activity - CTA) and the final session (software), the master is awarded an assessment according to the traditional 4-point system: "excellent", "good", "satisfactory" and "unsatisfactory".

**Score from discipline.** The final lesson (FL) is conducted according to the program of the discipline during the semester on a schedule, during the classes. Assessment of the discipline is given to the master at the last (final) class. The total score for the CTA and the final lesson (FL) is defined as the arithmetic mean of the traditional scores for each lesson and the software, rounded to 2 decimal places (to the nearest hundredths), which are converted into points according to the "Instructions for Assessment of Master Learning Activities" using Table or the average score (up to one hundredth) and its conversion to ECTC points is automatically obtained by the teacher through from the Electronic journal. The minimum number of points that a master must earn for his / her current activity while studying the discipline is 120 points, and the maximum number of points is 200 points.

The maximum number of points that a master can gain in studying the discipline is - 200, the minimum is 120 points. The type of final control is credit.

After completing the teaching of the discipline the master gets a credit.

**Assessment of masters' independent work.** Independent work of masters, which is provided by the topic of the lesson along with the classroom work, is assessed during the ongoing control of the topic at the relevant lesson.

Recalculation of the average for current activity in a multi-scale scale

(for disciplines ending with a credit)

4-point scale	200-point scale	4-point scale	200-point scale	4-point scale	200-point scale
5	200	4.22-4,23	169	3.45-3,46	138
4.97-4,99	199	4.19-4,21	168	3.42-3,44	137
4.95-4,96	198	4.17-4,18	167	3.4-3,41	136
4.92-4,94	197	4.14-4,16	166	3.37-3,39	135
4.9-4,91	196	4.12-4,13	165	3.35-3,36	134
4.87-4,89	195	4.09-4,11	164	3.32-3,34	133
4.85-4,86	194	4.07-4,08	163	3.3-3,31	132
4.82-4,84	193	4.04-4,06	162	3.27-3,29	131
4.8-4,81	192	4.02-4,03	161	3.25-3,26	130
4.77-4,79	191	3.99-4,01	160	3.22-3,24	129
4.75-4,76	190	3.97-3,98	159	3.2-3,21	128
4.72-4,74	189	3.94-3,96	158	3.17-3,19	127
4.7-4,71	188	3.92-3,93	157	3.15-3,16	126
4.67-4,69	187	3.89-3,91	156	3.12-3,14	125
4.65-4,66	186	3.87-3,88	155	3.1-3,11	124
4.62-4,64	185	3.84-3,86	154	3.07-3,09	123
4.6-4,61	184	3.82-3,83	153	3.05-3,06	122
4.57-4,59	183	3.79-3,81	152	3.02-3,04	121
4.54-4,56	182	3.77-3,78	151	3-3,01	120
4.52-4,53	181	3.74-3,76	150	<b>Less 3</b>	<b>Not enough</b>
4.5-4,51	180	3.72-3,73	149		

4.47-4,49	179	3.7-3,71	148
4.45-4,46	178	3.67-3,69	147
4.42-4,44	177	3.65-3,66	146
4.4-4,41	176	3.62-3,64	145
4.37-4,39	175	3.6-3,61	144
4.35-4,36	174	3.57-3,59	143
4.32-4,34	173	3.55-3,56	142
4.3-4,31	172	3.52-3,54	141
4,27-4,29	171	3.5-3,51	140
4.24-4,26	170	3.47-3,49	139

**Correspondence of discipline  
assessment in points assessment  
in ECTS and traditional  
assessment**

Assessment of discipline in points	Assessment on the ECTS scale	Traditional assessment from the discipline
180–200	A	5
160–179	B	4
150–159	C	4
130–149	D	3
120–129	E	3
Less 120	F, FX	2

### 3.2. Questions for credit.

1. Types of adverse reactions to drugs by strength, time of onset of manifestations, severity, origin, mechanism of development, connection with the defeat of organs and systems.
2. Classification of adverse drug reactions by M.D. Rawlins, J. W. Nhompson and WHO.
3. Factors influencing the development of adverse drug reactions. Dependence of adverse drug reactions on the properties of drugs (chemical structure, physicochemical properties, their doses and frequency of application), as well as on factors related to the biological object (age, genotype, phenotype, sex, weight body,

ethnic factor, biorhythms), climatic and anthropogenic factors (seasonality, temperature, pollution by toxic substances), pathological condition (kidney disease, liver, infections, cardiovascular pathology, metabolic and other disorders), physiological features (pregnancy, childbirth and etc.).

4. Adverse reactions to drugs associated with the pharmacokinetics of drugs: routes of administration, mechanisms of absorption, bioavailability parameters, binding to plasma proteins and other bioligands, distribution options in the body (deposition), penetration through histohematological bars "Era (placental, hematoencephalic and others), biotransformation (the role of cytochrome P-450), routes of excretion from the body.

5. Adverse reactions to drugs that occur during their repeated use. Tolerance or addiction (as a type of tachyphylaxis), dependence on the action of drugs (mental, physical). The concept of withdrawal and return syndrome. Medical and social aspects of the fight against drug addiction.

6. Adverse reactions with the combined use of drugs. Incompatibility of drugs (antagonism) - pharmaceutical, pharmacokinetic and pharmacodynamic. Polyprasmias. Medicinal disease. Polyvalent sensitization.

7. Absolute and relative overdose (toxic effects). Intolerance. Idiosyncrasy. Allergic reactions. Side effects that occur with the combined use of drugs. Mutagenicity, teratogenicity, embryotoxicity, fetotoxicity, carcinogenicity. Principles of treatment of drug poisoning.

8. Social factors increasing the frequency of adverse drug reactions. The role of the doctor in preventing adverse drug reactions

9. The main manifestations and mechanisms of typical adverse reactions to drugs that affect the function of cholinergic nerves. Clinical symptoms, prevention and assistance in case of adverse reactions.

10. The main manifestations and mechanisms of typical adverse reactions to drugs that affect the function of cholinergic nerves. Clinical symptoms, prevention and assistance in case of adverse reactions.

11. The main manifestations and mechanisms of typical adverse reactions to drugs that affect adrenergic innervation. Clinical symptoms, prevention and assistance in case of adverse reactions.

12. The main manifestations and mechanisms of typical adverse reactions to drugs for local anesthesia, astringent drugs, adsorbents, and drugs that irritate the nerve endings. Clinical symptoms, prevention and care in case of adverse reactions.

13. The main manifestations and mechanisms of typical adverse reactions to drugs for anesthesia. Clinical symptoms, prevention and care in case of adverse reactions.

14. The main manifestations and mechanisms of typical side effects of analgesic analgesic drugs: opiate and non-opiate analgesic drugs. Clinical symptoms, prevention and care in case of adverse reactions.

15. The main manifestations and mechanisms of typical side effects of psychotropic drugs: neuroleptics, tranquilizers, hypnotics, sedatives, lithium drugs. Clinical symptoms, prevention and assistance in case of adverse reactions.

16. The main manifestations and mechanisms of typical side effects of antiepileptic and antiparkinsonian drugs, drugs for the treatment of muscle, drugs that can be used

in Alzheimer's disease, multiple sclerosis and amyotrophic lateral sclerosis. Clinical symptoms, prevention and assistance in case of adverse reactions.

17. The main manifestations and mechanisms of typical adverse reactions to antidepressants, adaptogens of plant and animal origin, psychostimulants, analeptics. Clinical symptoms, prevention and care in case of adverse reactions.

18. The main manifestations and mechanisms of typical adverse reactions to hormonal drugs. Clinical symptoms, prevention and care in case of adverse reactions.

19. The main manifestations and mechanisms of typical side effects of anti-inflammatory drugs.

**Clinical symptoms, prevention and care in case of adverse reactions.**

20. The main manifestations and mechanisms of typical adverse reactions to antiallergic drugs. Clinical symptoms, prevention and care in case of adverse reactions.

21. The main manifestations and mechanisms of typical adverse reactions to drugs that affect immune processes. Clinical symptoms, prevention and care in case of adverse reactions.

22. The main manifestations and mechanisms of typical adverse reactions to vitamin drugs. Clinical symptoms, prevention and care in case of adverse reactions.

23. The main manifestations and mechanisms of typical adverse reactions to drugs that affect the respiratory system. Clinical symptoms, prevention and care in case of adverse reactions.

24. The main manifestations and mechanisms of typical adverse reactions to drugs that affect the gastrointestinal tract. Clinical symptoms, prevention and care in case of adverse reactions.

25. The main manifestations and mechanisms of typical adverse reactions to drugs that affect renal function. Clinical symptoms, prevention and care in case of adverse reactions.

26. The main manifestations and mechanisms of typical adverse reactions to drugs that affect the myometrium. Clinical symptoms, preventive measures and assistance in case of side effects.

27. The main manifestations and mechanisms of typical adverse reactions to drugs that affect hematopoiesis and hemostasis. Clinical symptoms, prevention and care in case of adverse reactions.

28. The main manifestations and mechanisms of typical adverse reactions to antihypertensive drugs. Clinical symptoms, prevention and care in case of adverse reactions.

29. The main manifestations and mechanisms of typical adverse reactions to antianginal drugs. Clinical symptoms, prevention and care in case of adverse reactions.

30. The main manifestations and mechanisms of typical adverse reactions to antiatherosclerotic drugs. Clinical symptoms, prevention and care in case of adverse reactions. Clinical symptoms, prevention and care in case of adverse reactions.

### **3.3. Control questions**

Consists in methodical recommendations from each lesson.

### **3.4. Individual tasks**

Preparation for a practical lesson. Writing essays, preparing presentations on a particular topic.

**Assessment of individual tasks** of the masters is carried out under the conditions of the teacher's tasks (report of a lecture at a practical lesson, a report with a presentation at a practical lesson, a report at scientific and practical conferences of the department, university, writing abstracts, articles, participation in the All-Ukrainian Olympiad). Points (no more than 10) are added as an incentive extra point to the final grade for the current learning activity. The total amount of points for the current educational activity may not exceed 200 points.

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

According to the provision on the appeal of the results of the final control of students of KhNMU [http://files.KhNMU.edu.ua:8181/upload/redakt/doc\\_uch-proc/polog\\_apel.pdf](http://files.KhNMU.edu.ua:8181/upload/redakt/doc_uch-proc/polog_apel.pdf)

## **4. Course politics.**

### **Academic expectations of students and female students. Course requirements.**

Students and female students are expected to attend all practical classes. If they missed classes, it is necessary to complete it (according to the schedule at the information stand of the department).

Written and homework assignments must be completed in full and on time, if students have questions, they can contact the teacher personally.

In order to achieve the learning goals and successfully complete the course, it is necessary: from the first day to join the work; read the material beforehand before considering it in a practical session; not to be late or miss classes; to come to the department dressed in a medical gown, to have replaceable shoes, to have a phonendoscope, a notebook, a pen; complete all necessary tasks and work daily; be able to work with a partner or as part of a group; seek help and receive it when you need it.

### **Practical classes**

Active participation in the discussion in the classroom, students / female students should be ready to understand in detail the material, ask questions,



express their point of view, discuss. During the discussion, the following are important:

- respect for colleagues,
- tolerance towards others and their experiences,
- sensitivity and impartiality,
- the ability to disagree with opinions, but respect the personality of the opponent,
- careful argumentation of your opinion and the courage to change your position under the influence of evidence,
- “I am” a statement when a person avoids unnecessary dressing up, describes his feelings and formulates his wishes based on his own thoughts and emotions,
- compulsory acquaintance with primary sources.

Creative approach in its various forms is encouraged. Students are expected to be interested in participating local, all-Ukrainian and international conferences, competitions and other events with a subject profile.

Students can discuss various tasks, but their implementation is strictly individual. Cheating, using various software tools, prompts, using a mobile phone, tablet or other electronic gadgets during the class for purposes not related to the educational process are not allowed. Students are not allowed to be late for practical classes.

Visiting patients during supervision in the hospital is possible, provided that students have the appropriate uniform.

Students with special needs can meet with the teacher or warn him before the start of classes, at the request of the student this can be done by the head of the group. If you have any questions, please contact the teacher.

Students are encouraged to participate in scientific research and conferences on this topic.

All students of KHNMU are protected by the Regulation on the Prevention, Prevention and Management of Cases of Sexual Harassment and Discrimination at Kharkiv National Medical University, designed to determine an effective mechanism for resolving conflict situations related to discrimination and sexual harassment. This Regulation was developed on the basis of such regulatory legal acts of Ukraine: the Constitution of Ukraine; Law of Ukraine "On Education"; Law of Ukraine "On Higher Education"; Law of Ukraine "On the principles of preventing and combating discrimination in Ukraine"; Law of Ukraine "On ensuring equal rights and opportunities for women and men"; Convention for the Protection of Human Rights and Fundamental Freedoms; The Convention against Discrimination in Education; The Convention on the Elimination of All Forms of Discrimination against Women; General Recommendation No. 25 to article 4, paragraph 1, of the Convention on the Elimination of All Forms of Discrimination against Women; General Comment No. 16 (2005) “Exactly for men and women the right to enjoy economic, social and cultural rights” (Article 3 of the International Covenant on Economic, Social and Cultural Rights; UN Committee on Economic, Social and Cultural Rights) Recommendations on education in the spirit international understanding,

cooperation and peace and education in the spirit of respect for human rights and fundamental freedoms (UNESCO) Concept of the State social program for ensuring equal rights and opportunities for women and men for the period until 2021. Kharkiv National Medical University provides education and employment free from discrimination, sexual harassment, intimidation or exploitation. The university recognizes the importance of confidentiality. All persons responsible for the implementation of this policy (employees / -these dean's offices, faculties, institutes and the Center for Gender Education, members of the student government and ethics committee, vice-rector for scientific and pedagogical work) respect the confidentiality of persons who report or are accused of discrimination or sexual harassment (excluding situations where legislation requires the disclosure of information and / or when disclosure of circumstances by the University is necessary to protect the safety of others).

KHNMU creates a space of equal opportunities, free from discrimination of any national, racial or ethnic origin, gender, age, disability, religion, sexual orientation, gender, or marital status. All rights, privileges, programs and activities that are granted to students / female students or university staff apply to all, without exception, subject to proper qualifications. The anti-discrimination policy and the policy of counteracting sexual harassment of KHNMU is confirmed by the Code of Corporate Ethics and the Charter of KHNMU.

### **Classroom Behavior (Basic "yes" and "no")**

It is important for students to follow the rules of proper conduct at the university. These rules are general for everyone, they also apply to the entire faculty and staff, and do not fundamentally differ from generally accepted norms.

During classes it is not prohibited:

- to leave the audience for a short time if necessary and with the permission of the teacher;
- drink soft drinks;
- take pictures of presentation slides;
- actively participate in the lesson

Prohibited:

- to eat (except for persons whose special medical condition requires another
- in this case, medical confirmation is required)
- to smoke, consume alcoholic and even low-alcohol drinks or drugs;
- to use obscene language or use words that offend the honor and dignity of colleagues and faculty;
- to play gambling;
- to damage the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter premises and territories)
- to make noise, shout or listen to loud music in classrooms and even corridors during class.

### **Occupational Safety and Health**

At the first class of the course, the basic principles of labor protection will be explained by conducting appropriate instructions. It is expected that each and every one should know where the emergency exit closest to the audience is, where the fire

extinguisher is located, how to use it, and the like.

**The procedure for informing about changes in the Syllabus:** the necessary changes in the Syllabus are approved by the methodological commission of the KhNMU on the problems of professional education of the surgical profile and are published on the website of the KhNMU, the website of the Clinical pharmacology department of the KhNMU.

## 5. Academic integrity.

The Department of Clinical Pharmacology and Internal Medicine maintains zero tolerance for plagiarism.

This position grounded at the requirements of Regulations on Academic Integrity and Ethics of Academic Relations at Kharkiv National Medical University [http://files.KNMU.edu.ua:8181/upload/redakt/doc\\_uchproc/polog\\_ad\\_et-yka\\_text.pdf](http://files.KNMU.edu.ua:8181/upload/redakt/doc_uchproc/polog_ad_et-yka_text.pdf)

Regulations on the Commission on Academic Integrity, Ethics and Conflict Management of KhNMU [http://files.KNMU.edu.ua:8181/upload/redakt/doc\\_uchproc/polog\\_komis\\_ad\\_text.pdf](http://files.KNMU.edu.ua:8181/upload/redakt/doc_uchproc/polog_komis_ad_text.pdf)

Academic integrity: [http://www.KhNMU.kharkov.ua/index.php?option=com\\_content&view=article&id=2520%3A2015-04-30-08-10-46&catid=20%3A2011-05-17-09-30-17&Itemid=40&lang=uk](http://www.KhNMU.kharkov.ua/index.php?option=com_content&view=article&id=2520%3A2015-04-30-08-10-46&catid=20%3A2011-05-17-09-30-17&Itemid=40&lang=uk)  
[http://files.KhNMU.edu.ua:8181/upload/redakt/doc\\_uchproc/kodex\\_AD.docx](http://files.KhNMU.edu.ua:8181/upload/redakt/doc_uchproc/kodex_AD.docx)

In the first lessons, informational events will be held on what exactly is considered plagiarism and how to correctly carry out an experimental scientific search.

## 6. Recommended literature

### Basic

1. Goodman & Gilman's : the Pharmacological Basis of Therapeutics, 13e Author: Laurence L Brunton; Björn C Knollmann; Randa Hilal-Dandan Publisher: New York, N.Y. : McGraw-Hill Education LLC., 2018. Series: McGraw-Hill's AccessMedicine. ISBN 9781259584732 1259584739
2. D Katzung & Trevor's Pharmacology Examination and Board Review, 12th Edition Bertram G. Katzung, Anthony J. Trevor, Marieke Knuidering-Hall McGraw-Hill Education, 5 сент. 2019 г. - pages 585 ISBN 126028848X, 9781260288483
3. Basic & Clinical Pharmacology 15th edition. — Katzung Bertram G., Vanderah Katzung Bertram G., Vanderah Todd W.- McGraw-Hill Education, 2021. — 1761 p. — ISBN 978-1260452310.
4. A Textbook of Clinical Pharmacology and Therapeutics/ Derek Waller Anthony Sampson- Elsevier.- 2017.-P. 744 –ISBN: 9780702071676
5. Basic Concepts in Pharmacology: What You Need to Know for Each Drug Class, 5e/ Janet L. Stringer. Stringer, Janet L[ed.] - McGraw-Hill's Access Medicine Publisher: New York,

N.Y.: McGraw-Hill Education LLC., 2017 ISBN: 9781259861079 (printISBN); 1259861074 (printISBN)

6. Poisoning & Drug Overdose, 7e Kent R. Olson, Ilene B. Anderson, Neal L. Benowitz, Paul D. Blanc, Richard F. Clark, Thomas E. Kearney, Susan Y. Kim-Katz, Alan H. B. Wu McGraw-Hill Education 2017 - pages: 960 ISBN 0071839798, 9780071839792
7. Клінічна фармакологія, 2021 / за ред. О.М. Біловола.- Нова книга, Вінниця 2021.-544с.
8. Компендиум 2017 – лекарственные препараты / д. ред. В.Н. Коваленко. – К.: ІУРІОН, 2017. – 2560 с. – ISBN 978-966-2066-71-5.
9. Клінічна фармакологія невідкладних станів у практиці стоматолога: навч. сіб. / О. М. Біловола, Л. Р. Боброннікова, І. І. Вакалюк та ін.; за ред. О. М. Біловола. – К.: Медицина, 2018. – 296 с.
10. A Textbook of Clinical Pharmacology and Therapeutics/Derek Waller Anthony Sampson- Elsevier.-2017.-P.744 -ISBN: 9780702071676
11. Basic & Clinical Pharmacology. 11th ed. Norwalk, Conn: Appleton and Lange, 2010.
12. Clinical Pharmacology. 12th Edition/Morris Brown-Pankaj, Sharma Fraz, Mir Peter Bennett.-Elsevier.-2018-P.720- ISBN: 9780702073281

### **Additional**

1. Compendium 2021 - drugs / under. ed. V.N. Kovalenko. - К .: МОРИОН, 2021. - 2566 с. - ISBN 978-966-2066-71-5.
2. Clinical pharmacology of emergencies in the practice of dentist: textbook. way. / OM Bilovol, LR Bobronnikova, II Vakalyuk and others; for order. OM Bilovol. - К .: Медицина, 2018. - 296 с.
3. Clinical pharmacology. Textbook for students of medical universities, interns, general practitioners, family medicine / O.M. Bilovol, L.R. Bobronnikov, and others. - Н .: Planeta-Print LLC, 2017. - 336 p.
4. Clinical Pharmacology. 12<sup>th</sup> Edition/Morris Brown Pankaj, Sharma Fraz, Mir Peter Bennet.- Elsevier.-2018-P.720- ISBN: 9780702073281.

### **7. Information resources**

1. Page of educational course in Moodle: <http://distance.knmu.edu.ua/course/view.php?id=4038>
2. [https://books.google.com.ua/books?id=B3OSDwAAQBAJ&printsec=frontcover&dq=pharmacology+book&hl=ru&sa=X&redir\\_esc=y#v=onepage&q=pharmacology%20book&f=false](https://books.google.com.ua/books?id=B3OSDwAAQBAJ&printsec=frontcover&dq=pharmacology+book&hl=ru&sa=X&redir_esc=y#v=onepage&q=pharmacology%20book&f=false) - Essentials of Medical Pharmacology
3. [https://books.google.com.ua/books?id=YwjjBQAAQBAJ&printsec=frontcover&dq=pharmacology+book&hl=ru&sa=X&redir\\_esc=y#v=onepage&q=pharmacology%20book&f=false](https://books.google.com.ua/books?id=YwjjBQAAQBAJ&printsec=frontcover&dq=pharmacology+book&hl=ru&sa=X&redir_esc=y#v=onepage&q=pharmacology%20book&f=false) - Introduction to Clinical Pharmacology - E-Boo

4. [https://books.google.com.ua/books?id=9XAzDwAAQBAJ&printsec=frontcover&dq=pharmacology+book&hl=ru&sa=X&redir\\_esc=y#v=onepage&q=pharmacology%20book&f=false](https://books.google.com.ua/books?id=9XAzDwAAQBAJ&printsec=frontcover&dq=pharmacology+book&hl=ru&sa=X&redir_esc=y#v=onepage&q=pharmacology%20book&f=false) - Pharmacology Flash Cards E-Book.
5. [https://books.google.com.ua/books?id=eypGwAEA-CAAJ&hl=ru&source=gbs\\_book\\_other\\_versions](https://books.google.com.ua/books?id=eypGwAEA-CAAJ&hl=ru&source=gbs_book_other_versions) - Katzung & Trevor's Pharmacology: Examination & Board Review
6. [https://books.google.com.ua/books?id=fp8XvgAACAAJ&dq=pharmacology+book&hl=ru&sa=X&redir\\_esc=y](https://books.google.com.ua/books?id=fp8XvgAACAAJ&dq=pharmacology+book&hl=ru&sa=X&redir_esc=y) - Goodman and Gilman's The Pharmacological Basis of Therapeutics, 13th Edition
7. [https://books.google.com.ua/books?id=-2ZnD-wAAQBAJ&printsec=frontcover&dq=side+effects&hl=ru&sa=X&redir\\_esc=y#v=onepage&q=side%20effects&f=false](https://books.google.com.ua/books?id=-2ZnD-wAAQBAJ&printsec=frontcover&dq=side+effects&hl=ru&sa=X&redir_esc=y#v=onepage&q=side%20effects&f=false) - Managing the Side Effects of Psychotropic Medications, Sec-ond Edition
8. [https://books.google.com.ua/books?id=H-d1DwAAQBAJ&pg=PA588&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwi0r8nrm8fzAhWh\\_7sIHQpNB7s4FBD0AX-oECAsQAQ#v=onepage&q=side%20effects&f=false](https://books.google.com.ua/books?id=H-d1DwAAQBAJ&pg=PA588&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwi0r8nrm8fzAhWh_7sIHQpNB7s4FBD0AX-oECAsQAQ#v=onepage&q=side%20effects&f=false) - Side Effects of Drugs Annual: A Worldwide Yearly Survey of New Data
9. [https://books.google.com.ua/books?id=JDU5DwAAQBAJ&pg=PP2&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwi0r8nrm8fzAhWh\\_7sIHQpNB7s4FBD0AX-oECAUQAQ#v=onepage&q=side%20effects&f=false](https://books.google.com.ua/books?id=JDU5DwAAQBAJ&pg=PP2&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwi0r8nrm8fzAhWh_7sIHQpNB7s4FBD0AX-oECAUQAQ#v=onepage&q=side%20effects&f=false) - Side Effects
10. <https://books.google.com.ua/books?id=LX3sDwAAQBAJ&pg=PA96&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwjQsaz7m8fzAhU4hf0HHSaXBbs4HhDoAX-oECAMQAQ#v=onepage&q=side%20effects&f=false> - Drug-Induced Ocular Side Effects: Clinical Ocular Toxicology E-Book.
11. [https://books.google.com.ua/books?id=Nn\\_ED-wAAQBAJ&pg=PA18&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwjQsaz7m8fzAhU4hf0HHSaXBbs4HhDoAX-oECAQQAQ#v=onepage&q=side%20effects&f=false](https://books.google.com.ua/books?id=Nn_ED-wAAQBAJ&pg=PA18&dq=side+effects&hl=ru&sa=X&ved=2ahUKEwjQsaz7m8fzAhU4hf0HHSaXBbs4HhDoAX-oECAQQAQ#v=onepage&q=side%20effects&f=false) - Prediction of side effects from anticancer treatment.
12. <https://www.escardio.org/> web-site of European Society of Cardiology -a world leader in the discovery and dissemination of best practices in cardiovascular medicine.
13. <https://www.fda.gov/drugs/information-consumers-and-patients-drugs/finding-and-learning-about-side-effects-adverse-reactions> web-site FDA (Section devoted to monitoring and registration of side effects of drugs and medical procedures)
14. <http://libr.KhNMU.edu.ua/> the library of KhNMU
15. <http://repo.KhNMU.edu.ua> repository KhNMU
16. <https://accessmedicine.mhmedical.com/> - resources to support teachers and students on Distance Learning/ has the depth and breadth of content and functionality in place to serve as a cornerstone for online teaching and learning during this critical time.
17. Australian Bulletin of Adverse Reactions.  
<http://www.tga.health.gov.au/adr/aadrb.htm>.
18. On-line registration of adverse drug reactions on the FDA website.  
<https://www.accessdata.fda.gov/scripts/medwatch/medwatch-online.htm>.

19. British Monthly Safety Bulletin. <http://www.mhra.gov.uk/Publications/Safetyguidance/DrugSafetyUpdate/index.htm>.
20. Resource for drug interaction: <http://medicine.iupui.edu/flockart/>
21. Lectures for postgraduate education "Principles of Clinical Pharmacology" of the Clinical Center of the US National Institutes of Health. <http://www.cc.nih.gov/researchers/training/principles.shtml>.
22. Working group on pharmacotherapy of the European Society of Cardiology <https://www.escardio.org/>
23. Interregional Society of Evidence-Based Medicine: <http://www.osdm.org/index.php>
24. European Society of Clinical Pharmacologists and Pharmacotherapists: <http://www.eacpt.org>
25. Resource on pharmacogenetic. <http://www.pharmgkb.org/>
26. State Register of Medicines [www.moz.gov.ua](http://www.moz.gov.ua)
27. Unified protocols of patient management [www.moz.gov.ua](http://www.moz.gov.ua)
28. <http://www.osvita.org.ua> - Educational portal - all about education in Ukraine.
29. <http://nbuv.gov.ua> - site of the National Library of Ukraine named after VI Vernadsky.
30. <http://korolenko.kharkov.com> - site of Kharkiv State Scientific Library named after VG Korolenko.

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The head of the Department

of Clinical Pharmacology and Internal Medicine \_\_\_\_\_

prof. Knyazkova I.I.