INTERNATIONAL HIGHER SCHOOL OF MEDICINE

INTERNAL MEDICINE DEPARTMENT

SYLLABUS

Clinical Pharmacology

2026-2027 academic year

For students of medical faculty

3course 6 semester

2 credits (60 h, including auditorial 36,independent work 24 h)

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The Syllabus is considered
at the meeting of the department of internal medicine
Protocol № 1 dated 28.08.2026
Head of the department prof. Kudaibergenova N.T.



Course Objective: Clinical pharmacology consists in mastering the knowledge necessary for conducting modern and individualized pharmacotherapy, as well as the principles of efficacy, safety and availability of medicines, skills and abilities in the treatment and prevention of various diseases.

After study of the discipline the student must:

Knowledge: basic principles and methods of treatment of the most common diseases.

Skill: carry out the synthesis and analysis of information on the principles and methods of treatment of the most common diseases from the standpoint of evidence-based medicine

Attitude: using the basic techniques of evidence-based medicine, as well as the synthesis and analysis of information about the etiology, pathogenesis, clinic and diagnosis of the most common diseases, to give practical recommendations for the treatment of the most common diseases.

Pre-requisites.

- Anatomy (macro-microanatomy)
- Normal physiology
- Pathological physiology
- Proped therapy
- Basic pharmacology **Post-requisites.**
- Surgical diseases
- Obstetrics and gynecology
- Occupational diseases
- Public health and health
- Oncology
- Dermatovenereology
- Infectious diseases
- Polyclinic therapy
- Medical control
- Family medicine
- Anesthesiology, intensive care, emergencies

Thematic plan of lectures

№	Theme of lecture	Hours	Date
1.	Introduction to Clinical Pharmacology. Concept of Rational Treatment. Clinical Pharmacokinetics and Pharmacodynamics. Side Effects. Drug Interactions.	2 h.	09.2026-05.2027
2.	Rational Antimicrobial Therapy.	2 h.	09.2026-05.2027
3.	Clinical and Pharmacological Approaches to Drug Selection for Arterial Hypertension.	2 h.	09.2026-05.2027
4.	Clinical and Pharmacological Approaches to Drug Selection for Diabetes Mellitus.	2 h.	09.2026-05.2027
5.	Clinical Pharmacology of Nonsteroidal Anti-inflammatory Drugs (NSAIDs).	2 h.	09.2026-05.2027
6.	Clinical Pharmacology of Glucocorticosteroids (GCS).	2 h. .	09.2026-05.2027
7.	Clinical and Pharmacological Approaches to Drug Selection for Broncho-Obstructive Diseases	2 .h.	09.2026-05.2027
8.	Clinical Pharmacology of Drugs Used for Sleep Disorders and Anxiety	2 h.	09.2026-05.2027

Thematic plan of practice classes

№	Theme of practical class	Hours	Date
1.	Algorithm for Selecting Personalized Drugs. Clinical Pharmacology of Antiprotozoal Drugs. Clinical Pharmacology of Antiviral Drugs.	2 h.	09.2026-05.2027
2.	Clinical and Pharmacological Aspects of Selecting Drugs for Respiratory and Genitourinary Tract Infections.	2 h.	09.2026-05.2027
3.	Clinical and Pharmacological Approaches to Selecting Drugs for Coronary Heart Disease.	2 h.	09.2026-05.2027
4.	Clinical and Pharmacological Approaches to Selecting Drugs for Heart Failure.	4 h.	09.2026-05.2027

5.	Module 1.	2 h.	09.2026-05.2027
6.	Clinical and Pharmacological Approaches to Selecting Drugs for Arthritis	2 h.	09.2026-05.2027
7.	Clinical and Pharmacological Approaches to Selecting Drugs for Iron Deficiency Anemia.	2 h.	09.2026-05.2027
8	Clinical and Pharmacological Approaches to Selecting Drugs for Peptic Ulcer Disease.		09.2026-05.2027
9	Clinical Pharmacology of Drugs Used in Geriatrics. Clinical pharmacology of drugs used during pregnancy in pediatrics		09.2026-05.2027
10	Module 2.		09.2026-05.2027

Task for independent work:

№	Unit name .	Name of work	Labor intensity (hour)
1	Introduction to clinical pharmacology. Choice of personal preparation	• Answers to security questions • essay writing • doing homework for class	12
	Clinical and pharmacological approach to the choice of drug for various diseases	• Answers to security questions • essay writing • doing homework for class • reading text (textbook, additional literature, handouts)	12
	Total:		24

Basic literature

№	Authors	Title	The year of publishing	publishing house	Availability in the IHSM library (number of)
1	Bennett P.N.	Clinical Pharmacology	2003	9th edition	25
	Katzung B.G.	Basic Clinical Pharmacology	2004		2
	Katzung B.G.	Basic Clinical Pharmacology	2007	10 th ed.	5
	Katzung B.G.	Basic Clinical Pharmacology	2015	13 th ed.	2
	Katzung B.G.	Basic Clinical Pharmacology	2018	14 th ed.	3

Additional literature

№	Authors	Title	The year of publishing	publishing house	Availability in the IHSM library (number of)
1	Harrison's Kasper D.L.	Principal of Internal Medicine.	2015	Vol.1, 2,3.19th ed.	3
2	Davidson. Ralston S.	Priciples and Practice of Medicine	2018	23th ed	2

Software

1. General purpose software: text editors (MicrosoftOffice, PowerPoint, SwayOffice, Excel, Googledrive).
2. Web browsers (Google, Opera, Yandex)
3. Learning platforms (Zoom, Google Classroom

Resources of the information and telecommunication network "Internet"

1. https://youtu.be/LjsuCafsSR0
2. https://nplus1.ru/

Grading policy and procedures for all types of work

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):
current score - 40 points independent work - 20 points
control score (final assessment of knowledge per unit) - 40 points
Maximum score - 100 (40+20+40)

Grading system for student's achievements

Criteria for assigning grades for the course				
Maximum score	Intervals			
	« unsatisfactory»	« satisfactory»	«good »	«excellent»
40	0-23	24-30	31-35	36-40
Interval criteria	Frequently misses classes, does not complete homework or prepare for class, and is inactive in class. Unable to apply acquired knowledge to solving clinical problems.	Sometimes he misses classes, completes assignments, but with serious errors, is active in class, but does not differentiate the diagnosis of various diseases.	Rarely misses classes, is active, completes homework, and is almost always prepared for class. Able to solve clinical problems, but with minor errors.	Attends all classes, completes homework, and correctly analyzes clinical problems involving various diseases
IWS-20	0-11	12-14	15-17	18-20
Interval criteria	assignments for independent work are not completed, or they contain numerous errors; the student has not met the requirements for composing the work	The tasks for independent work are completed, but with errors; 2 points are missing from the program.	assignments for independent work are completed, mostly without errors or with minor errors, one point is missing from the program	assignments for independent work are completed without errors, the material is fully prepared according to the sample
40	0-23	24-30	31-35	36-40

Interval criteria	The answer represents disjointed knowledge with significant errors regarding the question; - fragmentary and illogical presentation; the student does not understand the	The answer is incomplete, contains errors in detail, the ability to convey the meaning of generalized knowledge is not demonstrated, and the student's speech requires correction and adjustments;	A complete, detailed answer to the question was given, demonstrating the ability to distinguish essential and non-essential features and cause-andeffect relationships; - the narrative is not logical enough, with	A complete, detailed answer to the question posed is provided; - the answer has a clear structure and logical sequence,
	connection between the question being discussed and other subjects of the course; speech is illiterate; - significant errors in demonstrating exercises; incorrect choice of tactics for the given disease; - incorrect answers to additional questions.	- the logic and consistency of presentation are impaired; the student is unable to independently identify essential and nonessential features and cause-and-effect relationships; - errors in the prescription and correct choice of treatment method; - numerous errors in patient management tactics; - the student is unable to answer most of the additional questions.	isolated errors in details, which the student corrected with the teacher's assistance; - insufficient confidence and speed in demonstrating the exercises; - isolated errors in technique; - answers to additional questions are correct, but not sufficiently complete and clear.	reflecting the essence of the concepts, theories, and phenomena being explored; - the exercises are selected and performed correctly; - answers to additional questions are clear and concise;

Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work). -
Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-10 points.

Academic Ethics Policy.
- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.

- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-10 points.

Guidelines for the lessons of the discipline

Key questions covered in lesson 1: Algorithm for Selecting Personalized Drugs.
Clinical Pharmacology of Antiprotozoal Drugs. Clinical Pharmacology of Antiviral Drugs.
Key questions covered in lesson 1: Efficacy, safety, suitability, cost of drugs. Consultation, information, instruction and warning of patients. Monitoring of treatment.
Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition p 88-95; p 808-863; p 864-889;

Key questions covered in lesson2: Clinical and pharmacological approaches to choosing of drugs for respiratory tract infections. Clinical and pharmacological approaches to choosing of drugs for urinary tract infections.
Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition p 752-807; p 794-807;

Key questions covered in lesson 3 . Clinical and pharmacological approaches to choosing of drugs for the coronary disease.
The main pharmacological groups, mechanism of action, therapeutic use, adverse reactions, contraindications. Rational choosing of drugs for various forms of the coronary disease. Use of drugs depending on the clinical features.
Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition p 187-208; p 603-618; p 619-642; p 643-660

Key questions covered in lesson 4 . Clinical and pharmacological approaches to choosing of drugs for heart failure.
The main pharmacological groups, mechanism of action, therapeutic use, adverse reactions, contraindications. Rational choosing of drugs for heart failure. Use of drugs depending on the clinical features. Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition: p 227-250

Key questions covered in lesson 6. Clinical and pharmacological approaches to choosing of drugs for arthritis

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition: p 661-683; p 935-955.

Key questions covered in lesson 7 . Clinical and pharmacological approaches to choosing of drugs for iron- deficiency anemia.

Iron drugs, mechanism of action, therapeutic use, main adverse reactions. Rational choosing of drugs for iron-deficiency anemia. Clinical and pharmacological approaches to choosing of drugs for other anemia.
Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition: p 571-588

Key questions covered in lesson 8. Clinical and pharmacological approaches to choosing of drugs for peptic ulcer disease.
PPI, H_2-blockers, antacids, cytoprotectors, mechanism of action, therapeutic use, adverse reactions, contraindications. Rational choosing of drugs for peptic ulcer disease. Clinical pharmacology of drugs used in the treatment of gastrointestinal diseases.
Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition: p 1035-1057

Key questions covered in lesson 9. Clinical pharmacology of drugs used in geriatric.
Medicinal treatment at the older age. Pharmacokinetics in the elderly. Pharmacodynamics in the elderly. Polypharmacy at the older age. Drugs adverse reactions and contraindications at the older age. Considerations for effective treatment in the elderly.
Analysis of clinical cases.
Triade Mother-Fetus-Placenta. Peculiarities of drugs pharmacokinetics and pharmacodynamics during pregnancy. General principles of medicamentous treatment during pregnancy. General principles of medicamentous treatment during breast-feeding. Special aspects of pediatric pharmacology. Analysis of clinical cases.

Recommended reading for the lesson:

Katzung B.G. Basic Clinical Pharmacology 2018 14 th edition: p 1001-1014

Methodological instructions for the implementation of independent work on the discipline.

PPT: Each student must prepare a 10-15 slide PowerPoint presentation on their assigned topic.
The presentation must include a theoretical overview, practical applications, and current research findings

Summary: The essay should be 3–5 pages (Times New Roman, font size 12, line spacing 1.5).

1. Structure
   - Introduction
     - Justification of the topic choice.
     - Aims and objectives of the essay.
   - Theoretical Overview o Key concepts and definitions.
     - Main theories, approaches, or models related to the topic.
   - Practical Applications o Examples of applying theory in real practice.
     - Case studies, clinical cases, or applied research.
   - Current Research Findings
     - Brief review of recent publications (last 5–7 years).
     - Key conclusions of modern researchers.
   - Conclusion o Summary of the analysis.
     - Personal perspective or recommendations.
2. Formatting
   - References must be included.
   - Bibliography at the end (at least 5–7 sources, preferably scientific articles and textbooks).
   - Clarity and logical flow of the text.
3. Content Requirements
   - Clear connection between theory and practice.
   - Critical analysis rather than simple retelling.
   - Ability to highlight the main points.

Rational prescribing and prescription writing		To prepare PPT
Drug Receptors.		To prepare PPT
Clinical pharmacology of ethanol		To prepare PPT
Clinical pharmacology of sympathomimetic drugs		To prepare PPT
Vasoactive peptides (angiotensin II, natriuretic peptides)		Write a summary
Clinical pharmacology of cancer chemotherapeutic drugs		Write a summary
Drugs used in dislipidemia.		Write a summary
Clinical pharmacology of dependence and addiction		Write a summary
Drugs used in pain syndrome		Write a summary
Clinical uses of immunosuppressive drugs		Write a summary
Drug choosing in blood clotting		Write a summary
Dermatologic pharmacology		To prepare PPT
Drugs used in the treatment in irritable bowel syndrome		To prepare PPT
Clinical pharmacology of local anesthetics		To prepare PPT
Clinical pharmacology of thyroid and antithyroid drugs.		To prepare PPT
16	Nutritional supplements. Botanicals (“Herbal Medications”)	To prepare PPT