Khanty-Mansiysk Autonomous Okrug-Ugra
"Surgut State University"

Approved by
Deputy Rector for Academic Affairs

_____E.V. Konovalova

" 11" June 2026, Record No. 5

Clinical pharmacology

Syllabus

Department **Internal diseases**

Curriculum s310501-ЛечДелоИн-26-6.plx
Specialty 31.05.01 General Medicine

Qualification **General Practitioner**

Form of education **Full-time**

Total (in credits) **3**

Total academic hours 108

including Contact 64
Self-study 44

Control: credit with a mark
12 term

Course outline in terms

Academic year (Term)	**12 (6.2)**		Total	
Weeks	17 2/6			
Type of classes	Cur	Syl	Cur	Syl
Lectures	16	16	16	16
Practical	48	48	48	48
Contact work	48	48	48	48
Self-study	44	44	44	44
Total	108	108	108	108

The Syllabus is compiled by:
PhD in Medical Sciences,
Senior lecturer, Frolenkova L. A.

The Syllabus
Clinical pharmacology

Developed in accordance with Federal State Educational Standard:

Federal State Educational Standard of higher education in the specialty 31.05.01 General medicine (Order of the Ministry of Education and Science of the Russian Federation 12.08.2020 г. № 988)

Based on the Curriculum:
31.05.01 GENERAL MEDICINE

Specialization: General Medicine

Approved by the Academic Council of Surgut State University, “11” 06 2026, Record No. 5

The Syllabus was approved by the department
Internal diseases

Head of Department, Doctor of Medicine, Professor Aryamkina O.L.

1. COURSE OBJECTIVES	
1.1	**The aim** of the course is to master general principles of pharmacotherapy of diseases and approaches to the selection of effective, safe and available medications (MS) for modern individualized pharmacotherapy using basic data on pharmacokinetics (PK), pharmacodynamics (PD), pharmacogenetics (PG), adverse drug reactions (ADR) and guidelines of evidence-based medicine (EBM).

2. COURSE OVERVIEW	
Course code (in curriculum)	B1 B 25
2.1	**Assumed background:**
2.1.1	Bioethics
2.1.2	Latin
2.1.3	Microbiology, Virology
2.1.4	Anatomy
2.1.5	Chemistry
2.1.6	Biology
2.1.7	Internal Diseases Propaedeutics, X-Ray Diagnostics
2.1.8	Hominal Physiology
2.1.9	Biochemistry
2.2	**Post-requisite courses and practice:**
2.2.1	Hospital Therapy, Endocrinology
2.2.2	Ambulatory Therapy

3. COMPETENCES UPON COMPLETION OF THE COURSE (MODULE)

GPC-7.1: Demonstrates knowledge of the classification, mechanisms of action, pharmacokinetics, and pharmacodynamics of medicinal products used in various fields of medicine; is able to determine indications and contraindications for their prescription, assess possible adverse effects and complications, and apply non-pharmacological therapy methods taking into account the mechanism of action, indications and contraindications, and possible adverse effects and complications.
GPC-7.2: Prescribes modern treatment regimens for diseases based on approved current Clinical Guidelines.
GPC-7.3: Monitors the efficacy and safety of the prescribed treatment for diseases based on approved current Clinical Guidelines.
GPC-8.3: Determines the need for the use of natural therapeutic factors, pharmacological and non-pharmacological therapy, and other methods in patients requiring medical rehabilitation and sanatorium-and-spa treatment.
PC-5.1: Demonstrates knowledge of the mechanisms of action, methods of application of pharmacotherapy, therapeutic nutrition, medical devices, and non-pharmacological treatment methods, as well as palliative and personalized medical care.
PC-5.2: Provides treatment to various categories of patients with diseases in outpatient settings, inpatient settings, and centers of high-tech medical care (HTMC) using medicinal products, medical devices, and therapeutic nutrition, taking into account the clinical picture, in accordance with current procedures, standards of medical care, and clinical guidelines (treatment protocols).
PC-5.3: Prescribes non-pharmacological treatment methods, palliative and personalized medical care to the patient.
PC-5.4: Demonstrates knowledge of adverse effects of medicinal products, methods of their administration, and duration of their use; evaluates the efficacy and safety of ongoing pharmacotherapy, therapeutic nutrition, and the use of non-pharmacological treatment, as well as therapeutic nutrition in palliative medical care.
PC-9.1: Conducts analysis of medical information.
PC-9.2: Presents medical information based on evidence-based medicine.
PC-10.1: Participates in the implementation of new methods and techniques aimed at protecting the health of citizens.

By the end of the course students must:

3.1	**know:**
3.1.1	- the peculiarities of the subject and objectives of the discipline Clinical Pharmacology;
3.1.2	- role, place and connection with other Sciences in the system of biological and medical disciplines;
3.1.3	- main historical stages of Clinical Pharmacology evolution;
3.1.4	- prospects for the development of Science and new directions in the study of Clinical Pharmacology;
3.1.5	- the main groups of medications, peculiarities of their application, proposed clinical indications and contraindications for use;

3.1.6	- group specificity and PD of the main groups of medications, the pharmacological effect type of medications, the action of medicinal products through the receptor, by indirect changes in the effect of endogenous agonist, by inhibition of transport processes, enzymes and other mixed effects;
3.1.7	- the main parameter characteristics of PK of medications, their dynamics, dosing regimen by various pathologies, as well as in the elderly, during pregnancy and lactation, depending on the nature of the disease and the functional state of the patient's body, the presence of bad habits (smoking, alcoholism, drug addiction), phenotype and genotype metabolic pathways;
3.1.8	- peculiarities of dosing medications taking into account Chronobiology and Chrono pharmacology, including features of absorption, metabolism, and isolation of medicinal products, manifestations of pharmacological effects;
3.1.9	- the principles of mathematical modeling to select the dosing regimen of medications;
3.1.10	- methods of assessment (effect objectification) of clinical efficiency and safety of the main groups of medications;
3.1.11	- the main ADR of the most common medications, their identification, classification and registration, methods of prevention and correction of ADR;
3.1.12	- the basics of the formulary system (formulary list, formulary article) and standards of diagnostics and treatment of the most common diseases.
3.2	**be able to:**
3.2.1	- analyze and use the results of the studies of PD / PK of medications;
3.2.2	- choose effective, safe and affordable medicines in accordance with the clinical diagnosis, taking into account their pharmacokinetics, pharmacodynamics, interactions with other medications, individual sensitivity, comorbidities, functional state of the body (pregnancy and lactation);
3.2.3	- calculate the dose of medications for patients with chronic renal failure, impaired liver function, elderly and senile age, children;
3.2.4	- calculate the loading and maintaining dose of the medicinal product according to the indications;
3.2.5	- explain the rules of applying medications to the patients;
3.2.6	- monitor the effectiveness and use safety of prescribed medicines;
3.2.7	- diagnose and treat medication overdoses;
3.2.8	- select the necessary scope of routine (survey, examination) and special laboratory and functional methods of research on systems for the assessment of PD effects of medications and interpret the data; choose methods of adequate effectiveness and safety control of treatment and predict the risks of ADR development;
3.2.9	- determine the optimal dosage regimen; choose the dosage form of the medication, dose, pathway, frequency and duration of administration of medicinal products; know peculiarities of medications selection depending on the timing of pregnancy, lactation; pharmacological tests to assess individual sensitivity to medicines;
3.2.10	- identify ADR in the appointment of the most common medicines, classify, register and suggest ways to prevent and correct them;
3.2.11	- choose medications to form the medicine formulary;
3.2.12	- use educational, scientific, normative and reference literature.

4. STRUCTURE AND CONTENTS OF THE COURSE (MODULE)							
Class code	**Topics /Class type**	**Term / Academic**	**Academic**	**Competences**	**Literature**	**Interactive.**	**Notes**

1.1	**Section 1. Introduction to Clinical Pharmacology.** 1.1 Introduction to Clinical Pharmacology. Essentials of rational pharmacotherapy. Fundamentals of evidence-based medicine. Side effects of medications. Interaction of medicines /Self-study/	12	3	GPC-7.1 GPC7.2 GPC-7.3 PC-5.1 PC-5.4 PC-9.1 PC-9.2 PC10.1	L1.1 L2.1 L3.1	0	
1.2	Essentials of rational pharmacotherapy. Fundamentals of evidence-based medicine. Side effects of medications. Interaction of medicines. / Pr/	12	6	GPC7.1 GPC7.2 GPC7.3 PC5.1 PC5.4 PC9.1	L1.1 L2.1 L3.1	1	
1.3	Essentials of rational pharmacotherapy. Fundamentals of evidence-based medicine./ Pr/	12	6	GPC7.1 GPC7.2 GPC7.3 PC5.1 PC5.4 PC9.1 PC9.2 PC10.1	L1.1 L2.1 L3.1	1	
	Section 2. Clinical Pharmacology of medications used in diseases of cardiovascular system.						
2.1	Clinical Pharmacology of antianginal and lipid-lowering medications. Clinical Pharmacology of antihypertensive agents. Basic principles of arterial hypertension pharmacotherapy /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
2.2	Basic principles of pharmacotherapy of chronic and acute heart failure. /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
2.3	Clinical Pharmacology of antiarrhythmic medications. Basic principles of pharmacotherapy of cardiac arrhythmias /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
2.4	Clinical Pharmacology of antianginal and lipid-lowering medications. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	1	

2.5	Clinical Pharmacology of antianginal and lipid-lowering medications. The basic principles of pharmacotherapy of hypertension. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
2.6	Clinical Pharmacology of antihypertensive agents. Basic principles of arterial hypertension pharmacotherapy /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	1	
2.7	Basic principles of pharmacotherapy of chronic and acute heart failure. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	1	
2.8	Basic principles of pharmacotherapy of chronic and acute heart failure. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
2.9	Clinical Pharmacology of antiarrhythmic medications. Basic principles of pharmacotherapy of cardiac arrhythmias. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1 E1	1	
2.10	Clinical Pharmacology of antiarrhythmic medications. Basic principles of pharmacotherapy of cardiac arrhythmias. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
	Section 3. Clinical Pharmacology of medications used in diseases of the bronchopulmonary system.						
3.1	Clinical Pharmacology of medications used by bronchial obstruction syndrome. Basic principles of pharmacotherapy of bronchial asthma and chronic obstructive pulmonary disease. /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1	L1.1 L2.1 L3.1 E1	0	

3.2	Clinical Pharmacology of medications used by bronchial obstruction syndrome. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3	L1.1 L2.1 L3.1	0	
3.3	Clinical Pharmacology of medications used by bronchial obstruction syndrome. Basic principles of pharmacotherapy of bronchial asthma, chronic obstructive pulmonary disease. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4	L1.1 L2.1 L3.1	1	
	Section 4. Clinical Pharmacology of medications used in diseases of the gastrointestinal tract.						
4.1	Clinical Pharmacology of medications used in diseases of the gastrointestinal tract. /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1	L1.1 L2.1 L3.1 E1	0	
4.2	Clinical Pharmacology of medications used in diseases of the gastrointestinal tract. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1	L1.1 L2.1 L3.1	0	
4.3	Clinical Pharmacology of medications used in diseases of the gastrointestinal tract. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1	L1.1 L2.1 L3.1	1	
	Section 5. Clinical Pharmacology of medications used in kidney diseases.						
5.1	Clinical Pharmacology of medications used in chronic and acute renal failure. /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1	L1.1 L2.1 L3.1 E1	0	
5.2	Clinical Pharmacology of medications used in chronic and acute renal failure. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4	L1.1 L2.1 L3.1	0	
5.3	Clinical Pharmacology of medications used in chronic and acute renal failure. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
	Section 6. Clinical Pharmacology of antibacterial, nonsteroidal and steroid anti-inflammatory medications.						
6.1	Clinical Pharmacology of antibacterial, nonsteroidal and steroid anti-inflammatory medications. /Self-study/	12	3	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2	L1.1 L2.1 L3.1 E1	0	
6.2	Clinical Pharmacology of antibacterial agents. Clinical Pharmacology of nonsteroidal and steroid anti-inflammatory medications. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2	L1.1 L2.1 L3.1	0	

6.3	Clinical Pharmacology of antibacterial agents. Clinical Pharmacology of nonsteroidal and steroid anti-inflammatory medications. /Pr/	12	6	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2	L1.1 L2.1 L3.1	0	
	Section 7. Clinical and pharmacological approaches to the selection, efficiency assessment and safety of medications affecting hemostasis.						
7.1	Clinical and pharmacological approaches to the selection, efficiency assessment and safety of medications affecting hemostasis. /Self-study/	12	4	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2	L1.1 L2.1 L3.1 E1	0	
7.2	Clinical and pharmacological approaches to the reasons for the appointment, selection, efficiency assessment and safety of medications affecting hemostasis. /Lec/	12	2	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2	L1.1 L2.1 L3.1	0	
7.3	Clinical and pharmacological approaches to the reasons for the appointment, selection, efficiency assessment and safety of medications affecting hemostasis. /Pr/	12	4	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3	L1.1 L2.1 L3.1	0	
	Section 8. Final class						
8.2	Control work /Control/	12	0	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	
8.4	Credit with a mark	12	0	GPC-7.1 GPC-7.2 GPC-7.3 GPC-8.3 PC-5.1 PC-5.2 PC-5.3 PC-5.4 PC-9.1 PC-9.2 PC-10.1	L1.1 L2.1 L3.1	0	

5. ASSESSMENT TOOLS

5.1. Tests and tasks

Supplement 1

5.2. Topics for written papers

Supplement 1

6. COURSE (MODULE) RESOURCES

6.1. Recommended Literature

6.1.1. Core

	Authors	Title	Publish., year	Quantity
L1.1	Alyautdin R. N.	Pharmacology. Illustrated textbook.	Moscow: GEOTAR Media, 2020, electronic resource	1

6.1.2. Supplementary

	Authors	Title	Publish., year	Quantity

L2.1	Kharkevitch, D. A.	Parmacology: Textbook	Moscow: GEOTAR Media, 2019, electronic resource	1
6.1.3. Methodical development				
	Authors	Title	Title	Quantity
L3.1	Stolbova M. V., Mitrofanova I. S., Chernysheva T. V., Liskova Yu. V., Tenchurina L. R.	Clinical pharmacology of antibacterial drugs: Textbook for 6th year- students of the Foreign Students Faculty	Orenburg State Medical University, 2020, electronic resource	1
6.2. Internet resources				
E1	FREE MEDICAL JOURNALS. Access mode: http://www.freemedicaljournals.com			
6.3.1 Software				
6.3.1.	Operational system Microsoft, applied programs pack Microsoft Office			
6.3.2 Information Referral systems				
6.3.2.1	E-data bases: РГБ, Orbicon, Medline			
6.3.2.2	Student Consultant http://www.studmedlib.ru			
7. MATERIAL AND TECHNICAL SUPPORT OF THE DISCIPLINE (MODULE)				
7.1	Classrooms for lecture classes, practical classes, group and individual consultations, current control and interim examination are equipped with: typical educational furniture, technical teaching aids, and employees for the presentation of educational information.			
7.2	Practical classes, individual consultations, current control and interim control are held in the classroom of the Department of Internal Diseases of the MI based on SOKB platform.			