MEDICAL UNIVERSITY – PLOVDIV

FACULTY OF MEDICINE

SYLLABUS

IN

P H A R M A C O L O G Y

Approved by the Department Council - Protocol №94/25.03.2022

Confirmed by the Faculty Council - Protocol №6/15.06.2022

PHARMACOLOGY

Syllabus

Discipline	Final exam/ semester	Auditorium classes				ECTS non-auditorium classes	ECTS total	Academic hours in years and semesters	
								3rd and 4th year	
Pharmacology	7th semester	Total	Lectures	Practices	ECTS			VI	VII
		135	60	75	4.5	2.2	6.7	2/2	2/3

DISCIPLINE: Pharmacology

TYPE OF DISCIPLINE ACCORDING TO THE UNIFORM STATE REQUIREMENTS: Mandatory

LEVEL OF QUALIFICATION: Master's degree /M/

FORMS OF TRAINING: Lecture courses, practical courses.

YEAR OF TRAINING: 3rd and 4th year

DURATION OF TRAINING: 2 semesters

ACADEMIC HOURS: 60 hours of lecture courses, 75 hours of practical courses

TECHNICAL EQUIPMENT APPLIED IN THE TRAINING: audiovisual equipment, tools and technical devices for illustration of mechanisms of action, pharmacological effects and adverse drug reactions of studied drugs, test books.

FORMS OF EVALUATION: Ongoing evaluation – weekly tests, oral examinations, colloquia on different syllabus sections.
Final evaluation – entry test, written essays, oral examination.

EVALUATION CRITERIA: The final exam grade is formed and calculated as the mean result of the written essays, oral examination and the year mark of the student's on-going assessment.

ASPECTS OF EVALUATION CRITERIA: Participation in discussions, solving tests, practical skills on prescribing drugs

SEMESTER EXAM: Yes (Entry test; written examination; oral examination).

STATE EXAM: No

LECTURER: Professors and Associated Professors from the Department of Pharmacology and Clinical Pharmacology

DEPARTMENT: Pharmacology and Clinical Pharmacology

ANNOTATION

The discipline Pharmacology allows students to acquire knowledge and skills in the following basic pharmacological concepts:

- *General Pharmacology* – pharmacokinetics and pharmacodynamics of drugs, drug interactions, adverse drug reactions, repeated drug administration, factors affecting drug action, drug administration in pregnancy, children and the elderly, patients with renal and liver failure; pharmacogenetics and chronopharmacology.
- *Special Pharmacology* – pharmacological characteristics of drug groups e.g. drugs affecting CNS, ANS, cardiovascular system, respiratory system, gastrointestinal system, urogenital tract; pharmacology of antimicrobials; vitamins and anticancer drugs, endocrine pharmacology, autacoids.

BASIC AIMS OF THE DISCIPLINE

The objective of the pharmacology course is to develop:

- ✓ Skills to characterize a group of drugs – pharmacokinetics, pharmacodynamics, adverse drug reactions, drug interactions, therapeutic uses, contraindications and application of this knowledge in clinical practice;
- ✓ Skills to use scientific literature concerning pharmacotherapy;
- ✓ Skills to prescribe drugs.

EXPECTED RESULTS

Theoretical knowledge – A thorough working knowledge of the pharmacokinetic and pharmacodynamic properties of drugs from different pharmacological groups.

Practical skills – The ability to prescribe drugs; knowledge of different methods employed in experimental pharmacology e.g. acute and chronic toxicity, analgesic activity, etc.

LECTURES

LECTURE 1 – 2 hours
INTRODUCTION IN PHARMACOLOGY
1. Subject and tasks of pharmacology.
2. Role of pharmacology.
3. Short history of pharmacology.
4. Branches of pharmacology.
5. Drug definition. Phases of drug discovery.

LECTURE 2 – 2 hours
GENERAL PHARMACOLOGY. PHARMACOKINETICS.
1. Routes of drug administration. Clinical aspects.
2. Absorption, transmembrane transport and distribution of the drugs in the body. Binding to plasma proteins. Barrier systems.
3. Drug metabolism.

LECTURE 3 – 2 hours
GENERAL PHARMACOLOGY. PHARMACOKINETICS (CONT). PHARMACODYNAMICS.
1. Elimination (routes of excretion). Clinical aspects
2. Mechanism of action and drug effects. Types of action. Drug receptors.

LECTURE 4 – 2 hours
GENERAL PHARMACOLOGY. FACTORS, AFFECTING DRUGS PHARMACOKINETICS AND PHARMACODYNAMICS.
1. Factors of the drug– dose, physical and chemical properties, chemical structure, etc.
2. Factors of the patient - age, gender, physiological conditions, genetic factors etc.

LECTURE 5 – 2 hours
GENERAL PHARMACOLOGY. REPEATED DRUG ADMINISTRATION. DRUG INTERACTIONS.
1. Drug interactions – synergy, potentiation, antagonism.
2. Repeated drug administration – tolerance, drug dependence, allergy, accumulation.

LECTURE 6 – 2 hours
CNS STIMULANTS
1. Psychostimulants – classification, mechanism of action, pharmacokinetics, pharmacodynamics, drug interactions, adverse drug reactions.
2. Antidepressants - classification, mechanism of action, pharmacokinetics, pharmacodynamics, drug interactions, adverse drug reactions.

3. Nootropic drugs - mechanism of action, pharmacokinetics, pharmacodynamics, drug interactions, adverse drug reactions.

LECTURE 7 – 2 hours
CNS DEPRESSANTS
1. Neuroleptics (antipsychotics) – definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.
2. Anxiolytics - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.
3. Antiparkinsonian drugs - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.

LECTURE 8 – 2 hours
CNS DEPRESSANTS – HYPNOTICS AND SEDATIVE DRUGS. ANTIEPILEPTIC DRUGS.
1. Sleep structure and sleep disorders.
2. Hypnotics - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.
3. Sedatives - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.
4. Antiepileptic drugs - classification, pharmacological effects, mechanism of action, adverse drug reactions, drug interactions.

LECTURE 9 – 2 hours
OPIOID ANALGESICS. NON-STEROIDAL ANTI-INFLAMMATORY DRUGS. ANALGESICS-ANTIPYRETICS
1. Opioid analgesics - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions. Toxicity of opioids.
2. NSAIDs - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.
3. Analgesics-antipyretics - definition, classification, mechanism of action, pharmacokinetics, pharmacological effects, adverse drug reactions, drug interactions.

LECTURE 10 – 2 hours
LOCAL ANESTHETICS. AUTACOIDS AND THEIR ANTAGONISTS
1. Histamin – types of histamine receptors, pharmacological effects of histamine.
2. Histamine antagonists - classification, mechanism of action, pharmacokinetics, pharmacodynamics, drug interactions, adverse drug reactions.
3. Serotonergic mediation, serotonin agonists and antagonists.
4. Eicosanoids (prostaglandins and leukotrienes) – physiological effects, clinical application of PGs, leukotriene antagonists and drugs, inhibiting PG synthesis
5. Drugs affecting the renin-angiotensin-aldosterone system.
6. Types of local anesthesia.
7. Local anesthetics - classification, mechanism of action, pharmacokinetics, pharmacodynamics, drug interactions, adverse drug reactions.

LECTURE 11 – 2 hours
CORTICOSTEROIDS. INSULIN AND ORAL ANTIDIABETIC DRUGS.
1. Corticosteroids - classification, pharmacokinetics, mechanism of action, pharmacodynamics, adverse drug reactions, drug interactions.

2. Insulin and oral antidiabetic drugs - classification, pharmacokinetics, mechanism of action, pharmacodynamics, adverse drug reactions, drug interactions.

LECTURE 12 – 2 hours
SEX HORMONES. DRUGS AFFECTING THE THYROID.
1. Sex hormones - classification, pharmacokinetics, mechanism of action, pharmacodynamics, adverse drug reactions, drug interactions.
2. Drugs affecting the thyroid - classification, pharmacokinetics, mechanism of action, pharmacodynamics, adverse drug reactions, drug interactions.

LECTURE 13 - 2 hours
VITAMINS
1. Fat-soluble vitamins - classification, pharmacokinetics, mechanism of action, pharmacodynamics, adverse drug reactions, drug interactions.
2. Water-soluble vitamins - classification, pharmacokinetics, mechanism of action, pharmacodynamics, adverse drug reactions, drug interactions.

LECTURE 14 – 2 hours
ANTICANCER DRUGS
1. Classification.
2. Mechanism of action of anticancer drugs.
3. Adverse drug reactions of anticancer drugs.

LECTURE 15 – 2 hours
ANTISEPTICS AND DISINFECTANTS
1. Definition of antisepsis and disinfection.
2. Classification of antiseptics and disinfectants.
3. Oxidants, halogens, detergents – mechanism of action, application, toxicity, drug preparations.
4. Phenols, aldehydes, alcohols - mechanism of action, application, toxicity, drug preparations.
5. Dyes, essential oils, phytopreparations, salts of heavy metals and acids - mechanism of action, application, toxicity, drug preparations.

LECTURE 16 - 2 hours
PRINCIPLES OF TREATMENT WITH ANTIMICROBIAL DRUGS. SULFONAMIDES AND TRIMETHOPRIM. QUINOLONES. ANTIFUNGAL AGENTS. ANTIVIRAL AGENTS. ANTIMYCOBACTERIAL DRUGS.
1. Principles of treatment with antibiotics and chemotherapeutics.
2. Sulfonamides and trimethoprim – classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.
3. Quinolones – classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.
4. Antiviral agents – classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions.
5. Antifungal agents – classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions.
6. Antimycobacterial drugs – classification, mechanism of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions.

LECTURE 17 - 2 hours
BACTERICIDAL ANTIBIOTICS.
1. β- lactam antibiotics - penicillins. Classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.
2. β- lactam antibiotics - cephalosporins. Classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.
3. Carbapenems, monobactams and glycopeptides - classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.
4. Aminoglycoside antibiotics - classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.

LECTURE 18 - 2 hours
BACTERIOSTATIC ANTIBIOTICS.
1. Tetracyclines – classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions.
2. Macrolides – classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.
3. Chloramphenicol. Lincosamides – classification, mechanism of action, spectrum and type of action, resistance, pharmacokinetics, adverse drug reactions, drug interactions, dosing in children and adults.

LECTURE 19 - 2 hours
CHOLINOTROPIC DRUGS.
1. Cholinergic mediation. Types and localization of cholinoceptors. Classification of cholinergic drugs.
2. Cholinomimetics with direct and indirect action. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
3. Antimuscarinic drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
4. Neuromuscular blocking drugs (Skeletal muscle relaxants). Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 20 - 2 hours
ADRENOMIMETICS.
1. Adrenergic mediation. Types and localization of adrenergic receptors.
2. Classification of adrenergic drugs.
3.Sympathomimetics with direct and indirect action. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 21 - 2 hours
ADRENOLYTICS.
1. Agonists of presynaptic α_2 adrenergic receptors. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Adrenergic antagonists (alpha and beta blockers). Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 22 - 2 hours
CARDIOVASCULAR DRUGS. CARDIAC GLYCOSIDES. ANTIARRHYTHMICS.
1. Cardiac glycosides. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Antiarrhythmics. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 23 - 2 hours
CARDIOVASCULAR DRUGS. ANTIANGINAL DRUGS. ANTIHYPERTENSIVE DRUGS.
1. Antihypertensive drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Antianginal drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 24 - 2 hours
CARDIOVASCULAR DRUGS. PERIPHERAL VASODILATORS. ANTIDYSLIPIDEMIC DRUGS.
1. Peripheral vasodilators. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Antidyslipidemic drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 25 - 2 hours
DRUGS AFFECTING HEMOPOESIS.
1. Agents used in anemias. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Hematopoietic growth factors. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 26 - 2 hours
DRUGS AFFECTING COAGULATION.
1. Haemostatics with local and systemic action. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Fibrinolytic inhibitors. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
3. Oral and injectable anticoagulants; Fibrinolytic agents; Antiplatelet drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

LECTURE 27 - 2 hours
DRUGS AFFECTING THE GASTROINTESTINAL SYSTEM.
1. Drugs affecting appetite – stimulants and supressors. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, contraindications.
2. Antiemetics. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, contraindications.
3. Drugs used in acid- peptic diseases. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
4. Hepatoprotective drugs. Mechanism of action, adverse drug reactions.

5. Pancreatic enzyme supplements.
6. Laxatives and antidiarrheal agents. Classification, mechanism of action, adverse drug reactions, contraindications.

LECTURE 28 - 2 hours
DRUGS AFFECTING THE RESPIRATORY SYSTEM:
1. Antitussive agents. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Drugs affecting the bronchial secretion. Mucolytics. Classification, mechanism of action, adverse drug reactions, indications and contraindications.
3. Drugs used in bronchial asthma. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, contraindications.

LECTURE 29 - 2 hours
DRUGS AFFECTING THE URINARY TRACT.
1. Diuretics – Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Drugs used in urinary bladder dysfunction. Classification, mechanism of action, adverse drug reactions.

LECTURE 30 - 2 hours
DRUGS AFFECTING THE FUNCTIONS OF THE UTERINE MUSCLE.
1. Uterokinetic drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.
2. Uterotonics and uterine muscle relaxing drugs. Classification, mechanism of action, pharmacokinetics, adverse drug reactions, drug interactions, indications and contraindications.

PRACTICES

PRACTICAL 1 – 2 hours
PRESCRIPTION
1. Drug definition.
2. Drug sources.
3. Prescription - parts of the prescription, units of measurement.
SOLID DOSAGE FORMS
1. Powders.
2. Tablets.
3. Lozenges.
4. Capsules.
5. Prescription rules of solid dosage forms.

PRACTICAL 2 – 2 hours
LIQUID DOSAGE FORMS
1. Solution and mixture.
2. Emulsions and suspensions.
3. Liquid drug forms for parenteral administration.
5. Prescription rules of liquid dosage forms.

PRACTICAL 3 – 2 hours

SEMI-SOLID DOSAGE FORMS. GASEOUS DOSAGE FORMS.
1. Oinments and pastes.
2. Plasters.
3. Gels and creams.
3. Rectal suppositories and vaginal pessaries.
4. Prescription rules of semi-solid dosage forms.
5. Gaseous dosage forms.

PRACTICAL 4 – 2 hours
GENERAL PHARMACOLOGY
1. Test.
2. Discussion on routes of administration, absorption, transmembrane transport, drug distribution, metabolism, excretion.

PRACTICAL 5 – 2hours
GENERAL PHARMACOLOGY PART 2
1. Test.
2. Discussion on pharmacodynamics, factors affecting drug effect, repeated drug administration, drug interactions.

PRACTICAL 6 – 2 hours
COLLOQUIUM ON PRESCRIPTION AND GENERAL PHARMACOLOGY
1. Prescriptions.
2. Written examination.

PRACTICAL 7 – 2 hours
CNS STIMULANTS
1. Test.
2. Discussion on psychostimulants, antidepressants and nootropic drugs.
3. Prescriptions.

PRACTICAL 8 – 2 hours
NEUROLEPTICS AND ANXIOLYTICS. ANTIPARKINSONIAN DRUGS.
1. Test.
2. Discussion on neuroleptics, anxiolytics and antiparkinsonian drugs.
3. Prescriptions.

PRACTICAL 9 -2 hours
HYPNOTICS AND SEDATIVE DRUGS. ANTIEPILEPTIC DRUGS.
1. Test.
2. Discussion on hypnotics, sedatives and antiepileptic drugs.
3. Prescriptions.

PRACTICAL 10 – 2 hours
OPIOD ANALGESICS. ANALGESICS-ANTIPYRETICS. NON-STEROIDAL ANTI-INFLAMMATORY DRUGS
1. Test.
2. Discussion on opioid analgesics, analgesics-antipyretics and NSAIDs.
3. Prescriptions.

PRACTICAL 11 – 2 hours
COLLOQUIUM ON DRUGS, AFFECTING THE CNS
1. Prescriptions.
2. Written examination.

PRACTICAL 12 – 2 hours
LOCAL ANESTHETICS. AUTACOIDS.
1. Test.
2. Discussion on local anesthetics and autacoids.
3. Prescriptions.

PRACTICAL 13 – 2 hours
HORMONES – INSULIN, ORAL ANTIDIABETIC DRUGS, CORTICOSTEROIDS
1. Test.
2. Discussion on insulin, oral antidiabetic drugs and corticosteroids.
3. Prescriptions.

PRACTICAL 14 – 2 hours
SEX HORMONES
1. Test.
2. Discussion on sex hormones.
3. Prescriptions.

PRACTICAL 15 – 2 hours
VITAMINS
1. Test.
2. Discussion.
3. Prescriptions.

PRACTICAL 16 - 3 hours
DRUG FORMS – REVISION.
1. Prescriptions of solid drug forms.
2. Prescriptions of liquid drug forms.
3. Prescriptions of semi-solid and gaseous drug forms.

PRACTICAL 17 - 3 hours
ANTISEPTICS AND DISINFECTANTS. SULFONAMIDES AND TRIMETHOPRIM.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 18 - 3 hours
CHEMOTHERAPEUTICS. QUINOLONES. ANTIFUNGAL AGENTS. ANTIVIRAL AGENTS. ANTIMYCOBACTERIAL DRUGS.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 19 - 3 hours
BACTERICIDAL ANTIBIOTICS. BACTERIOSTATIC ANTIBIOTICS.

1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 20 - 3 hours
COLLOQUIUM ON ANTIMICROBIAL AGENTS
1. Prescriptions.
2. Written examination.

PRACTICAL 21 - 3 hours
CHOLINOTROPIC DRUGS.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 22 - 3 hours
ADRENOTROPIC DRUGS.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 23 - 3 hours
COLLOQUIUM ON AUTONOMIC NERVOUS SYSTEM.
1. Prescriptions.
2. Written examination.

PRACTICAL 24 - 3 hours
CARDIAC GLYCOSIDES. ANTIARRHYTHMICS. ANTIANGINAL DRUGS.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 25 - 3 hours
ANTIHYPERTENSIVE DRUGS. PERIPHERAL VASODILATORS. ANTIDYSLIPIDEMIC DRUGS.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 26 - 3 hours
COLLOQUIUM ON DRUGS, AFFECTING THE CVS
1. Prescriptions.
2. Written examination.

PRACTICAL 27 - 3 hours
DRUGS AFFECTING HEMOPOESIS AND COAGULATION.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 28 - 3 hours
DRUGS AFFECTING THE GASTROINTESTINAL SYSTEM.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 29 - 3 hours
DRUGS AFFECTING THE RESPIRATORY SYSTEM.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

PRACTICAL 30 - 3 hours
DRUGS AFFECTING THE URINARY TRACT.
1. Test.
2. Discussion on the topic.
3. Prescriptions.

BIBLIOGRAPHY

1. Pharmacology handbook for medical and dental students. Eds. Assoc. Prof. Kostadinov and Assoc. Prof. Delev, Plovdiv, 2018.

2. Basic and Clinical Pharmacology 12th edition (LANGE Basic Science) by Katzung, Masters and Trevor, 2011.

3. Pharmacology (Lippincott's Illustrated Reviews Series) by Harvey, Clark, Finkel and Rey, BCPP, 2011.

4. Goodman and Gilman's The Pharmacological Basis of Therapeutics, 12th edition by Brunton, Chabner and Knollman, 2010.

5. Color Atlas of Pharmacology by Albrecht Ziegler, Mohr, Bieger and Lullmann, 2000.

CONSPECTUS
PHARMACOLOGY EXAM

I. General pharmacology:

1. Routes of drug administration.

2. Absorption and transmembrane transport of drugs.

3. Drug biotransformation (metabolism) – organs, types and drug interactions.

4. Drug distribution. Plasma protein binding. Barrier systems. Examples.

5. Drug excretion - organs and drug examples.

6. Pharmacodynamics. Non-receptor and receptor mechanisms of action.

7. Levels and mechanism of drug interactions.

8. Factors of the drug affecting drug action – chemical structure, physical and chemical properties, physical state, dose, dosage form.

9. Dose - definition. Types of doses. Therapeutic window and therapeutic index.

10. Factors of the patient that affect drug action – drugs in pregnancy, breast-feeding, children, elderly, liver and kidney diseases. Genetic abnormalities and drug action.

11. Multiple drug administration phenomena: drug tolerance, tachyphylaxis; substances causing dependence and abuse; accumulation; drug allergy.

12. Antiseptics and disinfectants. Definition. Mechanism of action.

13. Antiseptics and disinfectants. Dyes and detergents.

14. Antiseptics and disinfectants. Salts of heavy metals. Phenol and phenolic derivatives.

15. Oxidants. Formaldehyde and alcohols. Essential oils.

16. Male sex hormones and their antagonists. Anabolic agents.

17. Female sex hormones and their antagonists. Contraceptive preparations.

18. Pharmacological effects of fat - soluble vitamins (Vitamins A, D, E and K).

19. Pharmacological effects of water – soluble vitamins (Vitamins of group B and C).

20. Drugs affecting the functions of the uterine muscle: uterokinetic, uterotonic and tocolytic agents.

21. Thyroid and antithyroid drugs.

II. Special systems pharmacology:

1. Hypnotics. Sedatives.

2. Antiepileptic drugs.

3. Antiparkinsonian drugs.

4. Opioid analgesics.

5. Analgesics-antipyretics.

6. Non-steroidal anti-inflammatory drugs (NSAIDs).

7. Neuroleptics.

8. Anxiolytic agents. Central muscle relaxants.

9. Psychostimulants. Nootropic drugs.

10. Antidepressants and antimanic drugs.

11. Cholinergic drugs. Neuromuscular blocking drugs (Skeletal muscle relaxants).

12. Adrenergic drugs.

13. Histamine and histamine antagonists.

14. Serotonin, angiotensin, prostaglandins, leukotrienes and their antagonists.

15. Local anaesthetics.

16. Cardiac glycosides.

17. Peripheral vasodilators.
18. Angioprotectors and venotonic agents. Antidyslipidemic drugs.
19. Antiarrythmic drugs.
20. Antianginal drugs.
21. Antihypertensive drugs.
22. Agents used in anemias; hematopoietic growth factors.
23. Drugs affecting coagulation.
24. Antitussive agents. Drugs affecting the bronchial secretion. Mucolytics.
25. Drugs used in bronchial asthma.
26. Drugs affecting appetite – stimulants and suppressors. Antiemetics.
27. Drugs used to treat peptic ulcer disease.
28. Hepatoprotective drugs. Pancreatic enzyme supplements. Choleretic and cholekinetic agents.
29. Laxatives and antidiarrheal agents. Carminative agents.
30. Insulin and oral antidiabetics.
31. Adrenocorticosteroids.
32. Anticancer drugs.
33. Principles of treatment with antimicrobial drugs. Sulfonamides. Antifungal agents.
34. Quinolones. Antiviral agents.
35. Tetracyclines. Macrolides. Carbapenems and monobactams.
36. Chloramphenicol. Lincosamides. Antimycobacterial agents.
37. β- lactam antibiotics - penicillins.
38. β- lactam antibiotics - cephalosporins. Glycopeptides. Aminoglycoside antibiotics.
39. Diuretics.