

# INTERNATIONAL HIGHER SCHOOL OF MEDICINE

## Fundamental Disciplines Department

### SYLLABUS

#### Basic Pharmacology

2025-2026 academic year

for students of medical faculty

2nd course 3rd semester 25 groups

5 credits (150 h, including auditorial – 90 h, independent work – 60 h)

#### Practical classes:

Baktybekova N.B. (1-12 groups)

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#### Venue:

Educational and Morphological Center

Lev Tolstoy street 114/1, 5<sup>th</sup> floor

The Syllabus is considered  
at the meeting of Fundamental Disciplines Department  
Protocol № 1 dated 30.08.2025

Head of the department  A.M. Satarkulova

**Course Objective:** The study of the interaction of drugs with the human body: general patterns, features of pharmacokinetic and pharmacodynamic properties of groups and individual pharmacological drugs, side effects, indications and contraindications for use.

After study of the discipline the student must:

**Knowledge:**

- The use of drugs, disinfectants and their combinations in solving professional problems;
- Organization of qualified treatment for the patient;
- Dosage forms, routes of drug administration, types of their action and interaction;
- Main drug groups and pharmacotherapeutic actions of drugs by groups;
- Side effects of drugs and measures for their prevention and relief;
- Types of drug therapy complications;
- Types of drug interactions and types of drug incompatibility.

**Skill:**

- Apply drugs, disinfectants and their combinations in solving professional problems;
- Find information about medicines in available databases;
- Navigate the nomenclature of medicines;
- Prescribe medicines.

**Attitude:**

- Skill in the use of drugs, disinfectants and their combinations in solving professional problems;
- The ability to present information about pharmacological interventions in a way that is understandable to the patient;
- The skill of explaining to the patient the essence of pharmacological interventions;
- The ability to implement pharmacological intervention, interacting with participants in the treatment process.
- The skill of using medications in accordance with the rules for their use.
- The skill of using the regulatory framework, reference and scientific literature to solve professional problems.

**Pre-requisites.** Latin language, Biology, Anatomy, Normal physiology, Biochemistry.

**Post-requisites.** Internal Medicine, Children's Diseases, Obstetrics and Gynecology, Dermatovenereology, Ophthalmology, Otorhinolaryngology, Neurology and Fundamentals of Neurosurgery, Phthisiopulmonology, Infectious Diseases, Psychiatry and Narcology, Anesthesiology.

**THEMATIC PLAN OF LECTURES FOR 2<sup>ND</sup> YEAR 3<sup>RD</sup> SEMESTER**

№	Theme	Hours
1	Introduction to pharmacology. History of pharmacology.	2 h
2	Drug Nomenclature. Dosage forms and routes of drug administration.	2 h
3	Pharmacokinetics.	2 h
4	Pharmacodynamics.	2 h
5	Adverse effects of drugs. Drug-drug interactions.	2 h
6	Introduction to Autonomic Pharmacology.	2 h
7	Cholinergic and anticholinergic drugs.	2 h
8	Local Anaesthetics and Skeletal Muscle relaxants (drugs acting on somatic system).	2 h
9	Adrenergic agonist.	2 h
10	Adrenergic antagonists.	2 h
11	Introduction to the Central nervous system. General anaesthetics.	2 h
12	Opioid analgesics and antagonists. Ethanol.	2 h
13	Sedative, hypnotics drugs.	2 h
14	Antipsychotic drugs, antidepressants.	2 h
15	Antiepileptic, antiparkinsonian drugs.	2 h
16	Introduction to Cardiovascular System (Cardiac electrophysiological considerations).	2 h
17	Drugs Affecting renin angiotensin system (RAS).	2 h
18	Cardiac glycosides and drugs for heart failure.	2 h
19	Antiarrhythmic drugs.	2 h
20	Antianginal drugs.	2 h
21	Antihyperlipidemic drugs.	2 h

22	Diuretics and antidiuretics.	2 h
23	Antihypertensive drugs.	2 h
24	Plasma Expanders, Intravenous fluids and pharmacotherapy of shock.	2 h
25	Anticoagulants.	2 h
26	Thrombolytics. Antifibrinolytics. Antiplatelet drugs.	2 h
27	Drugs affecting the haematopoietic system.	2 h
	<b>Total:</b>	<b>54 h</b>

#### THEMATIC PLAN OF PRACTICAL CLASSES 2<sup>ND</sup> YEAR 3<sup>RD</sup> SEMESTER

№	Theme	Hours
1	Introduction to pharmacology. History of pharmacology. Drug Nomenclature. Dosage forms and routes of drug administration.	2 h
2	Pharmacokinetics.	2 h
3	Pharmacodynamics.	2 h
4	Adverse effects of drugs. Drug-drug interactions. <b>Unit №1</b>	2 h
5	Cholinergic and anticholinergic drugs.	2 h
6	Local Anaesthetics and Skeletal Muscle relaxants.	2 h
7	Adrenergic agonists.	2 h
8	Adrenergic antagonists. <b>Unit №2.</b>	2 h
9	General anaesthetics. Opioid analgesics and antagonists. Ethanol.	2 h
10	Sedative, hypnotics drugs.	2 h
11	Antipsychotic drugs, antidepressants.	2 h
12	Antiepileptic, antiparkinsonian drugs. <b>Unit №3.</b>	2 h
13	Cardiac glycosides and drugs for heart failure.	2 h
14	Antiarrhythmic drugs.	2 h
15	Antianginal drugs. Antihyperlipidemic drugs. <b>Unit №4.</b>	2 h
16	Diuretics and antidiuretics. Antihypertensive drugs.	2 h
17	Anticoagulants. Thrombolytics. Antifibrinolytics. Antiplatelet drugs.	2 h
18	Drugs affecting the haematopoietic system. <b>Unit №5.</b>	2 h
	<b>Total:</b>	<b>36 h</b>

#### THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

№	Theme of independent work	Hours
Unit I	Preparation of an abstract on the topic: «Local provisions of intravenous administration of drugs» Preparation of a presentation on the topic: «Features of the interaction of drugs in the application» Writing recipes Solution of test Work with literature.	12
Unit II	Preparation of an abstract on the topic: «Drugs of the use of in glaucoma» Preparation of a presentation on the topic: «Drugs for the rapid relief of an asthma attack» Solution of situational problems Writing recipes Work with literature.	12
Unit III	Preparation of a report on the topic: «Modern antidepressants and anxiolytics» Preparation of an essay on the topic: «Acute ethanol poisoning»	12

	Solution of situational problems Writing recipes Work with literature.	
Unit IV	Preparation of an abstract on the topic: «Uses of cardiac glycosides in patients with CHF» Writing recipes Solution of test Work with literature.	12
Unit V	Preparation of an abstract on the topic: «Toxic reactions of ACE-inhibitors in pregnant woman» Preparation of a presentation on the topic: «Pharmacological effects of loop diuretics depending on the route of drug administration and dose» Writing recipes Solution of test Work with literature.	12
	<b>Total:</b>	<b>60 h</b>

### Recommended reading for the discipline:

#### 1.Basic

- 1) Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015, Wolters Kluwer Health
- 2) Harvey R.A., Clark M.A., Finkel R. Lippincott Illustrated Review of Pharmacology. – 5 ed., 2012, Wolters Kluwer Health
- 3) Trevor A.J., Katzung G., Masters S.B. Pharmacology. – 8 ed., 2009, MC Graw Hill Medical
- 4) Garg G.R. Pharmacology. – 2 ed., 2019, Jaypee Brothers Medical Publishers
- 5) Tripathy K.D. Essentials of Medical Pharmacology. – 6 ed., 2008, Jaypee Brothers
- 6) Tripathy K.D. Essentials of Medical Pharmacology. – 7 ed., 2015, Jaypee Brothers
- 7) Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019, Jaypee Brothers
- 8) Nawaz Sh. Essentials of Pharmacology. – 9 ed., 2014, Jaypee Brothers Medical Publishers

#### 2.Additional

- 1) Garg G.R. Pharmacology. Exam Review Series. 2015, Jaypee Brothers Medical Publishers
- 2) Garg G.R. Review of Pharmacology. 2014, Jaypee Brothers Medical Publishers
- 3) Katzung B.G. Basic and Clinical Pharmacology - 8th ed., 2001, MC Graw Hill Medical
- 4) Katzung B.G. Basic and Clinical Pharmacology - 8th ed., 2004, MC Graw Hill Medical
- 5) Katzung B.G. Basic and Clinical Pharmacology - 10th ed., 2007, MC Graw Hill Medical
- 6) Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015, MC Graw Hill Medical
- 7) Mycek M.J., Harvey R.A., Champe P.C. Pharmacology – 2 nd ed., 2000, Richland, Washington, United States
- 8) Satoskar R.S. Pharmacology and Pharmacotherapeutics. -25th ed., 2017, Elsevier Health
- 9) Baird S.M. USMLE Step1 Pharmacology, 2000, Kaplan Publishing

### Resources of the information and telecommunication network «Internet»

1. <https://pharmaceuticals.gov.in/sites/default/files/NLEM.pdf>
2. [https://pharmacomedica.org/images/cnpm/CNPM\\_2016/katzung-pharmacology.pdf](https://pharmacomedica.org/images/cnpm/CNPM_2016/katzung-pharmacology.pdf)
3. <https://ismexams.com>

### 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

Grading criteria per discipline				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
Current control- 40	0-23	24-30	31-35	36-40

Interval description	Does not know the definition and classification of side effects of drugs. He does not know the indications for use and contraindications for the use of drugs. Does not answer additional questions asked by the teacher.	Knows the definition and classification of medicines. Knowledge of pharmacokinetics and pharmacodynamics of drugs. Does not know the mechanisms of action of drugs. Knows the therapeutic and toxic doses and side effects of drugs. Knows the indications for use and contraindications for the use of drugs. Hesitantly answers additional questions asked by the teacher.	Knows the definition and classification of medicines. Knowledge of pharmacokinetics and pharmacodynamics of drugs. Knows the therapeutic and toxic doses and side effects of drugs. Does not know the mechanisms of action of drugs. Knows the indications for use and contraindications for the use of drugs. Hesitantly answers additional questions asked by the teacher.	Knows the definition and classification of medicines. Knowledge of pharmacokinetics and pharmacodynamics of drugs. Knows the mechanisms of action of drugs and can explain them. Confidently knows the therapeutic and toxic doses and side effects of drugs. Confidently knows the indications for use and contraindications for the use of medicines. Confidently answers additional questions asked by the teacher.
Independent work - 20	0-11	12-15	16-17	18-20
Interval description	Doesn't do homework. Did not prepare an abstract, report. Can't write prescription. Can't complete the table. Not able to solve situational problems. Does not know how to solve crossword puzzles, test tasks. Does not know how to work with visual materials.	Does not complete homework. Prepared a defective abstract, report. Wrote a recipe with two or more mistakes. Didn't complete the table. Not confident in problem solving. Has doubts when solving crossword puzzles, test tasks. Not confident with visual materials	Completely completes homework. Prepared an abstract, a report. Wrote a recipe with no more than two mistakes. Completed the table. Solves situational problems, test tasks. Solve crossword puzzles with hesitation. Weakly works with visual materials	Completely completes homework, confidently answers questions. Prepared an abstract, report, confidently answers the questions asked by the teacher. Confident in writing recipes. Confidently solves situational problems, tests. Confidently fills in the table, knows how to work with visual materials, crossword puzzles
Control work (module) – 40	0-23	24-30	31-35	36-40
Interval description	Less than 60% of correct answers from the total number of questions during control testing	The presence of 60% to 75% correct answers from the total number of questions during testin	The presence of 76% to 89% correct answers of the total number of questions during control testing	The presence of 90% or more correct answers from the total number of questions during control testing

**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****Unit I. General pharmacology.**

**Key questions covered in lesson 1:** Introduction to pharmacology. History of pharmacology. Drug Nomenclature. Dosage forms and routes of drug administration. The contents of a subject of pharmacology, its place among other medical and biological sciences. A history of becoming of modern pharmacology. The basic sections of pharmacology: pharmacokinetics and pharmacodynamics of medicines, pharmacotherapy, pharmacy, toxicology.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 2:** Pharmacokinetics. Absorption of medicines. Influence of a way of introduction on absorption of medicines. The basic mechanisms of absorption: a filtration, passive diffusion, active transport. The factors influencing absorption of medicines at enteral reception of medicines. Concept about bioavailability of medicines. Distribution of medicines in an organism. Biotransformation of medicines, its basic reactions. Excretion of medicines, the basic ways of excretion.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 3:** Pharmacodynamics. The studying about pharmacodynamics of medicinal substances. The basic types of action of medicines (stimulation, depression, irritation, replacement, cytotoxic action). Ranges of doses from threshold up to toxic. Mechanisms of action of medicines (physical, chemical, through enzymes, through receptors).

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 4:** Adverse effects of drugs. Drug-drug interactions. Concept about interaction of medical products. Types of medicinal interactions. Classification of medicinal interactions. Pharmacokinetic interaction at a level of absorption, distribution, a metabolism and elimination. Interaction of food with medicines, interaction of chemical substances and medicines.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Final control work:** 40 multiple choice questions (MCQ).

**Guidelines for the lessons of the discipline****Unit II. Drugs affecting the autonomic nervous system.**

**Key questions covered in lesson 1:** Cholinergic and anticholinergic drugs: classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 2:** Local Anaesthetics and Skeletal Muscle relaxants: classification, mode of action, side effects, therapeutic uses. Treatment of poisoning by skeletal muscle relaxants. Antagonists of non-depolarizing agents.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 3:** Adrenergic agonists: classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 4:** Adrenergic antagonists: classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Final control work:** 40 multiple choice questions (MCQ).

**Guidelines for the lessons of the discipline****Unit III. Drugs affecting the central nervous system.**

**Key questions covered in lesson 1:** General anaesthetics. Opioid analgesics and antagonists. Ethanol: classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 2:** Sedative, hypnotics drugs: classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 3:** Antipsychotic drugs, antidepressants classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 4:** Antiepileptic, antiparkinsonian drugs: classification, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Final control work:** 40 multiple choice questions (MCQ).

**Guidelines for the lessons of the discipline****Unit IV. Drugs affecting the cardiovascular system: cardiac glycosides, antiarrhythmic and antianginal drugs.**

**Key questions covered in lesson 1:** Cardiac glycosides: classification of drugs, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 2:** Antiarrhythmic drugs: classification of drugs, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 3:** Antianginal drugs. Antihyperlipidemic drugs: classification of drugs, mode of action, side effects, therapeutic uses.

**Recommended reading for the lesson:**

- [1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015
- [2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019
- [3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Final control work:** 40 multiple choice questions (MCQ).

## **Guidelines for the lessons of the discipline**

### **Unit V. Drugs affecting the cardiovascular system: antihypertensive drugs and drugs affecting the hematopoietic system.**

**Key questions covered in lesson 1:** Diuretics and antidiuretics. Antihypertensive drugs: classification of drugs, mode of action, side effects, therapeutic uses.

#### **Recommended reading for the lesson:**

[1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015

[2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019

[3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 2:** Anticoagulants. Thrombolytics. Antifibrinolytics. Antiplatelet drugs: classification of drugs, mode of action, side effects, therapeutic uses.

#### **Recommended reading for the lesson:**

[1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015

[2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019

[3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Key questions covered in lesson 3:** Drugs affecting the haematopoietic system: classification of drugs, mode of action, side effects, therapeutic uses.

#### **Recommended reading for the lesson:**

[1] Karen Whalen Lippincott Illustrated Reviews: Pharmacology. ed.6 by , 2015

[2] Tripathy K.D. Essentials of Medical Pharmacology. – 8 ed., 2019

[3] Katzung B.G. Basic and Clinical Pharmacology - 13th ed., 2015

**Final control work:** 40 multiple choice questions (MCQ).

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

**Unit I. General pharmacology.** Students are given an individual learning project which must be completed. The results should be reported in the form of presentation on the topic: «Local provisions of intravenous administration of drugs» and «Features of the interaction of drugs in the application». Every student has to know drug nomenclature, dosage forms and routes of drug administration. To write out in recipes medical products in various medicinal forms.

**Unit II. Drugs affecting the autonomic nervous system.** Every student is given an individual learning project which must be completed. The results should be reported in the form of presentation on the topic: «Drugs of the use of in glaucoma» and «Drugs for the rapid relief of an asthma attack». Students should analyze action of cholinergic and adrenergic drugs on their pharmacokinetics and pharmacodynamics properties. To write out in recipes medical products in various medicinal forms. To estimate an opportunity of toxic action of medicine and ways of treatment of poisonings with medical products.

**Unit III. Drugs affecting the central nervous system.** Every group is given one common learning project which must be completed. The results should be reported in the form of presentation. on the topic: «Modern antidepressants and anxiolytics» and «Acute ethanol poisoning». Students have to know action of general anaesthetics, sedative and hypnotics drugs, antipsychotic and antidepressants drugs on their pharmacokinetics and pharmacodynamics properties. To write out in recipes medical products in various medicinal forms. To estimate an opportunity of toxic action of medicine and ways of treatment of poisonings with medical products.

### **Unit IV. Drugs affecting the cardiovascular system: cardiac glycosides, antiarrhythmic and antianginal drugs.**

Students are given an individual learning project which must be completed. Every group is given one common learning project which must be completed. The results should be reported in the form of presentation on the topic: «Uses of cardiac glycosides in patients with CHF». Students have to know action of cardiac glycosides, antiarrhythmic drugs, antianginal drugs and antihyperlipidemic drugs on their pharmacokinetics and pharmacodynamics properties. To write out in recipes medical products in various medicinal forms. To estimate an opportunity of toxic action of medicine and ways of treatment of poisonings with medical products.

**Unit V. Drugs affecting the cardiovascular system: antihypertensive drugs and drugs affecting the hematopoietic system.** Every student is given an individual learning project which must be completed. The results should be reported in the form of presentation on the topic: «Toxic reactions of ACE-inhibitors in pregnant woman» and «Pharmacological effects of loop diuretics depending on the route of drug administration and dose». Students should analyze action of diuretics, antihypertensive drugs, anticoagulants, thrombolytics, antifibrinolytics and antiplatelet drugs on their pharmacokinetics and pharmacodynamics properties. To write out in recipes medical products in various medicinal forms. To estimate an opportunity of toxic action of medicine and ways of treatment of poisonings with medical products.