

**MEDICAL UNIVERSITY – PLOVDIV**  
**FACULTY OF MEDICINE**

**SYLLABUS**

**IN**

**CLINICAL PHARMACOLOGY**

**Approved by the Department Council - Protocol №94/25.03.2022**

**Confirmed by the Faculty Council - Protocol №6/15.06.2022**

## CLINICAL PHARMACOLOGY

### Syllabus

Discipline	Final exam/ semester	Auditorium classes				ECTS non-auditorium classes	ECTS total	Academic hours in years and semesters
		Total	Lectures	Practices	ECTS			5 <sup>th</sup> year
Clinical Pharmacology	9 <sup>th</sup> semester	45	30	15	1.5	0.7	2.2	IX
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**DISCIPLINE:** Clinical 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:** 5<sup>th</sup> year

**DURATION OF TRAINING:** 1 semester

**ACADEMIC HOURS:** 30 hours of lecture courses, 15 hours of practical courses

**TECHNICAL EQUIPMENT APPLIED IN THE TRAINING:** Audiovisual equipment, tools and technical devices to illustrate the efficacy and safety of drugs, clinical cases.

**FORMS OF EVALUATION:** Ongoing evaluation – weekly tests, oral examinations, colloquia on clinical cases.

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, ability to solve clinical cases

**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 Clinical Pharmacology allows students to acquire knowledge and skills in the following concepts:

- The aim and objectives of Clinical Pharmacology;
- Principles of evidence-based medicine, WHO criteria for P-drug ;
- Principles of drug discovery;
- The role of clinical pharmacokinetics for drug dosage regimens and therapeutic drug monitoring;
- The role of clinical pharmacodynamics, clinical chronopharmacology, clinical pharmacogenetics for rational drug therapy.
- Pharmacotherapy during pregnancy and breast feeding, pharmacotherapy in the elderly, pharmacotherapy in patients with liver, renal or heart failure;
- Adverse drug reactions and important drug interactions;
- Principles of pharmacoconomics;
- Approaches for treatment of socially significant diseases – hypertension, chronic congestive heart failure, stable angina, pain, insomnia, bronchial asthma, peptic ulcer disease, infections.

### **BASIC AIMS OF THE DISCIPLINE**

- To use pharmacokinetic parameters in rational drug therapy;
- To be able to compare drugs from different pharmacological groups according to their efficacy, safety, drug suitability and cost;

- To be able to evaluate risk/benefit ratio in the treatment of socially significant diseases;
- To be able to choose a P-drug and alternatives in the treatment of pain, insomnia, hypertension, stable angina, ulcers etc.;
- To be able to use data from clinical trials.

## **EXPECTED RESULTS**

*Theoretical knowledge* – A thorough working knowledge of the efficacy and safety of drug therapy in patients with various physiological and pathological conditions.

*Practical skills* – The ability to determine a personal drug (p-drug) for a hypothetical patient and to prepare an appropriate therapeutic plan; the ability to use scientific literature to obtain data for drug efficacy and safety; the ability to use the data from clinical trials according to the principles of evidence-based medicine.

## **LECTURES**

### **Lecture 1** (2 hours).

Clinical Pharmacology – Introduction. Evidence- based medicine. Drug discovery – the role of clinical pharmacology.

### **Lecture 2** (2 hours).

Clinical and pharmacological approaches for treatment of pain.

### **Lecture 3** (2 hours).

Clinical and pharmacological approaches for treatment of arterial hypertension. Antihypertensive drugs.

### **Lecture 4** (2 hours).

Clinical and pharmacological approaches for treatment with antianginal drugs.

### **Lecture 5** (2 hours).

Clinical and pharmacological approaches for treatment of chronic heart failure. Drug epidemiology. Drug safety.

**Lecture 6** (2 hours).

Clinical pharmacokinetics. Pharmacokinetic indexes – clinical application.

**Lecture 7** (2 hours).

Clinical pharmacokinetics. Pharmacokinetic indexes – clinical application (cont). Clinical and pharmacological approaches for treatment of insomnia.

**Lecture 8** (2 hours).

Clinical and pharmacological approaches for treatment of bronchial asthma. Drug therapy in alcoholic patients and cigarette smokers.

**Lecture 9** (2 hours).

Clinical and pharmacological approaches for treatment with antiulcer drugs. Food regimen and drug therapy.

**Lecture 10** (2 hours).

Clinical and pharmacological approaches for treatment with antimicrobial drugs.

**Lecture 11** (2 hours).

Pharmacoeconomics. Adverse drug reactions.

**Lecture 12** (2 hours).

Clinical chronopharmacology. Clinical pharmacogenetics. Drug therapy in the elderly.

**Lecture 13** (2 hours).

Drug interactions. Benefit / risk ratio.

**Lecture 14** (2 hours).

Drug therapy in patients with liver, renal and heart failure.

**Lecture 15** (2 hours).

Pharmacotherapy in pregnancy and breast feeding.

## PRACTICES

### **Practical 1** (2 hours).

Clinical and pharmacological approaches for treatment of pain and insomnia. Discussion on clinical cases.

### **Practical 2** (2 hours).

Clinical and pharmacological approaches for treatment of arterial hypertension. Antihypertensive drugs. Discussion on clinical cases.

### **Practical 3** (2 hours).

Clinical and pharmacological approaches for treatment of stable angina pectoris and chronic congestive heart failure. Discussion on clinical cases.

### **Practical 4** (2 hours).

Clinical and pharmacological approaches for treatment for treatment of bronchial asthma. Clinical and pharmacological approaches for treatment for treatment of peptic ulcer disease. Discussion on clinical cases.

### **Practical 5** (2 hours).

Clinical and pharmacological approaches for treatment of infections. Antimicrobial drugs. Discussion on clinical cases.

### **Practical 6** (2 hours).

Pharmacological approaches in patients with acute myocardial infarction, hypertensive crises and asthmatic state – discussion on clinical cases in the Medical Simulation Training Center.

### **Practical 7** (2 hours).

Colloquium on Practicals 1, 2, 3, 4 and 5.

## BIBLIOGRAPHY

1. Basic and Clinical Pharmacology with Toxicology. Eds. N. Boiadjieva, Sofia, 2015.
2. Basic and Clinical Pharmacology 12<sup>th</sup> edition, (LANGE Basic Science) by Katzung, Masters and Trevor, 2011.
3. Introduction to Clinical Pharmacology, 6<sup>th</sup> edition, by Marilyn W. Edmunds, 2009.
4. Principles of Clinical Pharmacology, 2<sup>nd</sup> edition, by Atkinson, Abernety, Daniels, Detric and Markey, Academic Press, 2011.
5. Goodman and Gilman's The Pharmacological Basis of Therapeutics, 12<sup>th</sup> edition, by Brunton, Chabner and Knollman, 2010.
6. Color Atlas of Pharmacology by Albrecht Ziegler, Mohr, Bieger and Lullmann, 2000.

**CONSPECTUS**  
**CLINICAL PHARMACOLOGY EXAM**

1. Clinical Pharmacology - introduction, subject, aim and tasks. Evidence-based medicine and drug therapy, based on evidence.
2. The role of clinical pharmacology in drug development. Clinical trials - phases, designs in clinical research.
3. Clinical and pharmacological approaches for treatment with antimicrobial drugs.
4. Clinical pharmacokinetics - absolute and relative bioavailability and their use in clinical practice. Therapeutic drug monitoring.
5. Clinical and pharmacological approaches for treatment of bronchial asthma.
6. Clinical pharmacokinetics – pharmacokinetic indexes, clinical consequences for the efficacy of drug therapy. Regimens of drug dosage - clinical importance.
7. Clinical and pharmacological approaches for treatment with antiulcer drugs.
8. Clinical and pharmacological approaches for treatment with antianginal drugs.
9. Food regimen and drug therapy. Changes in drug pharmacokinetics and pharmacodynamics in alcoholic patients and cigarette smokers.
10. Clinical and pharmacological approaches for treatment of pain.
11. Clinical and pharmacological approaches for treatment of insomnia.
12. Clinical pharmacodynamics. Changes in drug pharmacokinetics and pharmacodynamics in patients with liver and heart failure.
13. Clinical chronopharmacology. Circadian rhythms in the functions of the human body and their role in rational pharmacotherapy.
14. Clinical and pharmacological approaches for treatment of arterial hypertension.
15. Clinical pharmacogenetics - subject, aim, tasks, clinical importance.
16. Clinical and pharmacological approaches for treatment of chronic heart failure.
17. Pharmacotherapy in pregnancy and breast feeding.
18. Drug therapy in the elderly. Changes in drug pharmacokinetics and pharmacodynamics in patients with diabetes mellitus and thyroid gland dysfunction.
19. Changes in drug pharmacokinetics and pharmacodynamics in patients with renal failure.
20. Drug interactions – clinical importance.
21. Drug epidemiology and drug safety. Adverse drug reactions (ADRs). Classification, registration, clinical detection of ADRs.

**22.** Efficacy and rationality of drug treatment – evaluation criteria in clinical practice.  
Pharmacoeconomics.