MEDICAL UNIVERSITY PLOVDIV

FACULTY OF PHARMACY

# ACADEMIC STANDART

# FOR ACADEMIC DISCIPLINE

# "PHARMACOTHERAPY"

# SPECIALITY MASTER OF PHARMACY

Approved by decision of the Department Council - Protocol No. 13 / 31.05.2017

## 1. Objective of the course in Pharmacotherapy

The pharmacotherapy course provides students with systematic theoretical and practical knowledge of clinical medicine and applied pharmacology. The program is based on the concept of diseases as a set of simultaneously occurring pathogenetically related syndromes and is adapted to the needs of pharmaceutical practice. The pharmacotherapy section taught by the Department of Pharmacology and Drug Toxicology discusses the fundamental principles of drug therapy, general symptoms and syndromes characteristic of different disease units and specific syndromes of internal medicine diseases with their pathogenesis, etiologic treatment . The part taught by the clinical departments deals with the individual nosological units and the course of the disease in hospitalized patients with demonstration and case analysis.

The aim of the course is to mastering the fundamental and practical knowledge of the diseases and their treatment, to develop the skills and knowledge to monitor the therapy and the side effects of the drugs.

The goal is coordinated with:
- the public mission of the university - training that "contributes to the implementation of the state policy for the development of higher medical education and medical science, for the improvement of the health and health status of the population" and "training of highly qualified specialists with higher medical education";
- volume and credit rating of the discipline (ECTS system), as shown in the curriculum;
- the qualification characteristic of the specialty;
- degree (professional bachelor, bachelor or master).

The purpose is in line with the place of the discipline in the specialty according to importance and chronology in the curriculum. Pharmacotherapy is a direct link and builds knowledge from disciplines such as internal deseases, pharmacology, pharmacokinetics, microbiology, physiology and pathophysiology. As a fundamental discipline, it serves the next stages of training. As a fundamental discipline, it serves the next stages of training.
Upon completion of the training, students should be able to:

1. Know the general symptoms and syndromes in internal medicine and the necessary therapeutic behavior with the choice of OTC products or prescribed drugs.

2. Describe the pathophysiological processes and clinical symptoms of the disease in order to properly orientate the disease symptom as well as the treatment guidelines. Such biomedical knowledge creates the opportunity for proper / right/ professional communication of the pharmacist in his pharmacy and hospital practice and for participation in monitoring the efficacy and safety of pharmacotherapy.

3. Describe the role of OTC products, prescribed medications, and non-pharmacological therapy in the control of socially significant diseases.

4. Know the factors that influence the choice of drug and drug form for the individual patient.
5. Have a thorough and analytical knowledge of monitoring the beneficial and unwanted effects of drug therapy.

**2. Course content of the discipline**

The lectures and the hours of lectures ,exercises, course assignments are listed on the website of the faculty http://mu-plovdiv.bg/wp-content/uploads/2016/09/uchebna-programa-farmatsiya.pdf

The course content of the subject is chronologically arranged so that each subsequent lecture/exercise uses already studied subject matter and concepts. It is in line with the university's priority goals and enables the development of the student's personal qualities. Unnecessary overlap or the existence of "white spots" between "related" curriculum disciplines are avoided. Learning content provides the acquisition of key competences and skills that are of primary importance for the future professional realization of the student.

**3. Prerequisites**

The student should have basic knowledge of Biology, Biophysics, Pharmaceutical chemistry, Biochemistry, Pharmacognosy, Pharmacology, Pharmacokinetics, Microbiology, Anatomy, Patoanatomy, Phisiology and Pathophysiology from the educational programs in the first years of university studies in order to begin and successfully complete Pharmacotherapy training.

**4. Academic resources**

The academic staff of the department consists of 8 lecturers on an employment contract. Of these, 1 are habilitated lecturer, 7 non-habilitated lecturers with PhD degrees in the relevant specialty. Of all lecturers 3 have a specialty in pharmacology, 1 in clinical pharmacology and therapy, 2 in clinical pharmacy and 1 in pharmacology and pharmacotherapy.

The habilitated lecturer in Pharmacoltherapy has excellent theoretical and practical training, high professionalism, long-term experience in teaching and research work. Besides higher education - Master of Medicine, he also hold a Master's Degree in Health Management. Habilitated lecturer from the Department of Pharmacology and Drug Toxicology is member of the Expert Commissions, Editorial boards of Journals, State Commissions for Acquisition of Specialty, Scientific and Professional Organizations, Reviewers of Scientific Articles, Monographs, Collections and Textbooks in Bulgaria and Abroad

The teachers in the department holding the respective academic positions meet the national requirements set out in the Higher Education Act, DASRBA, the Regulations for the implementation of the DASRBA and the RSA of MU-Plovdiv.

Lectures in Bulgarian and English are read by a habilitated lecturer (professor) with acquired PhD in "Pharmacology ( incl. pharmacokinetics and chemotherapy)". Up to 30% of the lectures are given to non-habilitated lecturers with a PhD degree in "Pharmacology (incl. pharmacokinetics and chemotherapy)".

Practical exercises in Bulgarian and English are conducted by habilitated and non-habilitated lecturers – assistant professors, chief assistant professors. Non-habilitated lecturers have "master" of medicine or pharmacy and were appointed after a competition.

**5. Material resourses**

The Department has at its disposal:

• 4 study rooms with a total area of approx. 103 sq.m.;

• 1 laboratories equipped with equipment for conducting experimental work. The total laboratory area of the department is about 30 $m^2$. The department's laboratory facilities include general and specific equipment, owned by the Department of Pharmacology and Clinical Pharmacology at the Medical University of Plovdiv, for the study of anti-inflammatory action, acute and chronic stress, pain, inflammation, training and memory.

• 4 cabinets - 16 square meters average area.

• 8 computers, allowing each teacher to work independently. The department has a continuous Internet connection and access to full-text publications through the library of MU - Plovdiv

**6. Lectures**

The lectures are prepared and presented in the form of multimedia presentations. The volume and format of the lectures are chosen by the lead lecturer. The material discussed in the lecture course precedes the practical exercises on the subject. Presentations used for lecturing allow preliminary training of students for each practical.

**7. Practical exercises**

Practical exercises are conducted with student groups. Handbooks with classifications, tests and prescription tasks in pharmacology and textbook in Pharmacotherapy are available in the department for the students'preparation. Their content is periodically updated, providing training in line with the dynamic changes in science "Pharmacotherapy". Individual and team tasks are handed out. Advantage is given to teamwork. The practice program also includes individual extracurricular work, preparation of the abstract and defense of the next exercise.

**8. Seminars**

Students are provided with advance information and explanations about the upcoming check/examination. The seminars are conducted with the whole group and beginning with an individual oral examination, followed by a written examination on an individual topic. The results of the control are discussed at the next exercise.

**9. Information resources. Basic literature. Websites.**

Teachers have developed lectures in an electronic version. Practical exercises are conducted on the basis of a published handbook. The Library and Information Center of MU-Plovdiv provides a sufficient amount of specific specialized information to assist the students' training.

*Basic literature*

- ✓ The pharmacological basis of therapeutics, Goodman & Gilman's, 13th edition, 2018 ISBN: 978-1-25-958474-9
- ✓ Problems in Pharmacotherapy and clinical pharmacy First edition, M. Karaivanova, S. Konstantinov, G. Momekov, D. Delev, N. Danchev. Softraide 2013, ISBN: 978-954-334-151-1
- ✓ Pharmacotherapy Principles & Practice 5th edition, M. Chisholm-Burns, T. Schwinghammer, Mc Graw Hill Education 2019. ISBN: 978-1-260-01944-5

The access to and use of information resources, as well as the service for the delivery of electronic articles for students, PhD students and employees from the Plovdiv University are free of charge.

**10. Control work**

Students are loaded dynamically and intensive during the semester. Teachers control students' progress twice during the semester - during colloquiums and seminar. Ongoing control include one case and one theoretical question. Students are provided with advance information and explanations about the control work. The results are discussed at the next practical exercise with the students with explanations to assist in further preparation. The results of these tests are included as a component in the final grade for the semester.

**11. Student's independent work and engagement**

The student's independent work is supervised by the lecturer (assistant) who guides the student both in the literary sources and in the methods of their acquisition and study. Sample tests and self-study questions are included in the curriculum and are available *online* at the MU-Plovdiv website: http://mu-plovdiv.bg/wp-content/uploads/2016/09/uchebna-programa-farmatsiya.pdf

## 12. Collaboration between students and the teaching staff

This cooperation is expressed in:

- The teacher's commitment to the student and their preliminary preparation, current learning difficulties and opportunities with an individual learning program to achieve more.
- The use of reception counseling hours.
- Participation in a pharmacology study group.
- Involving students in teams for scientific tasks, research, projects, etc.

## 13. Exams

The on-going evaluations, provided in the pharmacology program, are given for:

- The student's results in practical exercises, discussions, solving of cases and preparation of abstracts, work of the student with the assistant on scientific research and projects, etc.;
- Written tests (colloquiums and seminar).

## 14. Evaluation standards

At the beginning of the classes in Pharmacotherapy, the assistant acquaints students with the standards of assessment, the procedures for conducting current control and the opportunities for obtaining feedback on their progress during the semester.

Standards for assessing student achievement are defined to objectify students' grades are unbiased. The evaluation criteria are as follows:

- **Poor mark (2)** – scant knowledge that can not serve as the basis for the next levels of pre-clinical and clinical training.

- **Average (3)** – reproduction of knowledge about medicines in a "ready scheme"-classification, pharmacodynamics, lack of basic knowledge about adverse drug reactions; representing unresolved solutions to simple tasks; limited prescribing skills for prescription drugs, in theurapetic cases; lack of knowledge for personal use of the obtained professional competencies; terminology is not well adopted, presenation is characterized by poor language. There are no skills for the personal use of the professional competences obtained; terminology is not well adopted, presentation is characterized by poor language.

- **Good (4)** – key and additional knowledge on the classification, pharmacokinetics, pharmacodynamics of medicinal products and their adverse drug reactions (ADRs) are descriptively mastered; there is limited independence and skills to solve simple tasks, although there is a good language culture, inaccuracies in the concepts used are allowed; prescription of medicinal products in a prescription.

- **Very good (5)** - very well mastered key and additional knowledge on the classification, pharmacokinetics and pharmacodynamics of medicinal products; meaningful and correct understanding of the material, possible ADRs and drug interactions of individual drug groups. Independent, non-standard, search for a new algorithm and analysis of therapeutic cases; skills to

solve difficult tasks; tries to explain and substantiate their thesis; good language culture; prescription of medicinal products in a prescription; skills to optimize drug therapy in different groups patients - children, nursing mothers and pregnant women, the elderly, patients with comorbidities.

• **Excellent (6)** – excellent knowledge of information sources and classification of drugs; thoroughly mastered key and additional knowledge about pharmacokinetics and pharmacodynamics of drugs; independent logic, thinking and correct understanding of the potential for ADRs and drug interactions; skills to apply the learned material to solve pharmacotherapeutic cases; presence of creative elements; accuracy and rich language culture; skills to optimize drug therapy in different groups patients - children, nursing mothers and pregnant women, the elderly, patients with comorbidities.

## 15. Formation of the final mark

The final grade determines to what extent the student has achieved the learning goal set at the beginning. Semester examination in pharmacology includes three elements:

• Entry test with a duration of 15 minutes. The test is considered successfully passed with 70% correct answers.

• Written examination with a duration of one hour and thirty minutes.

• Oral examination – solving case study and discussion on him.

The student gets a poor mark if:

• they quit the exam.

• they do not comply with the minimum requirements for the entry test.

• they not write on all questions included in the written examination, no matter how they developed the other questions.

Upon re-sit of the exam, the student attends all three parts of the examination.

During students' oral examinations the grades of the colloquiums and seminars held during the academic year are taken into account. The current control score is obtained as the arithmetic mean of these assessments. In case of poor assessment of the colloquiums / seminars, the student receives an additional question from the colloquium / seminar. The answer to the supplementary question takes part in the final evaluation of the oral examination.

The final score is obtained as a sum of the six-point scores of the different components multiplied by the relevant coefficients of significance, namely:

$$Q_{\text{final grade}} = K1\,Q_{\text{grade of the written exam}} + K2\,Q_{\text{grade of the oral exam}} + K3\,Q_{\text{grade of the on-going control}}$$

$K1 = 0.33$; $K2 = 0.33$; $K3 = 0.33$

In case of a failed entry test, a poor assessment of the written or oral examination the final grade is necessarily a poor one.

The exam materials are stored and the students are given an opportunity to get acquainted with them and the grounds for their evaluation according to a procedure announced in advance.

The period during which the students have access to the exam materials and results is not longer than 5 working days after the exam date.

Each discipline has a characteristic to which the student is given access at the beginning of the training.

The academic standard for an academic discipline is approved by Decision of the Academic Council - Protocol No. 9 / 26.11.2015 and published on the website of MU – Plovdiv.

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