

**SYLLABUS**

**concerning the cycle of education 2022-2028**

(date range)

**1.1. BASIC INFORMATION CONCERNING THIS SUBJECT / MODULE**

Subject / Module	<b>PHARMACOLOGY</b>
Course code / module *	<b>Fm/C</b>
Faculty of (name of the leading direction)	<b>Medical College of Rzeszów University</b>
Department Name	<b>Department of Experimental and Clinical Pharmacology</b>
Field of study	<b>medical direction</b>
Level of education	<b>uniform master's studies</b>
Profile	<b>practical</b>
Form of study	<b>stationary / extramural</b>
Year and semester	<b>year IV, semester VIII</b>
Type of course	<b>obligatory</b>
Coordinator	<b>prof. dr hab. n. med. Piotr Tutka</b>
First and Last Name of the Teacher	<b>prof. dr hab. n. med. Piotr Tutka dr hab. n. med. inż. Dorota Bartusik-Aebisher mgr farm. Patrycjusz Kołodziejczyk</b>

\* - According to the resolutions of the Faculty of Medicine

**1.2. Forms of classes, number of hours and ECTS**

Lecture	Exercise	Conversation	Laboratory	Seminar	ZP	Practical	Self-learning	Number of points ECTS
10	40							4

**1.3. The form of class activities**

classes are in the traditional form

classes are implemented using methods and techniques of distance learning

**1.4. Examination Forms / module (exam, credit with grade or credit without grade)**

**2. REQUIREMENTS**

Basics of knowledge in the field of anatomy, physiology, biochemistry, microbiology and pathology.  
 Knowledge, skills and competences of the above subjects according to the program of studies of the first, second and third year.  
 Passing semesters 6 and 7 in the field of pharmacology.

### 3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS

#### 3.1. Objectives of this course/module

C1	Acquisition of knowledge by the student on the pharmacological action of drugs, indications and contraindications to their use, side effects and interactions between drugs used in the therapy of various diseases
C2	Understanding the mechanisms of action of drugs, their fate in the body and interaction
C3	Acquisition of knowledge and skills to recognize and properly respond to adverse and toxic drug reactions
C4	The acquisition of the ability to use the sources of information on medicines correctly (databases, characteristics of publications) and to interpret the knowledge contained therein
C5	Obtain basic knowledge about the separateness of pharmacotherapy of children, the elderly, pregnant women and patients with liver and kidney damage and the ability to modify drug doses in these conditions
C6	Substantive preparation and shaping of the student's attitude to use knowledge about medicines in clinical practice
C7	Acquiring the ability to save ready-made and prescription drugs
C8	Acquisition of knowledge and skills in the field of treatment of life-threatening conditions

#### 3.2 OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)

EK (the effect of education)	The content of the learning effect defined for the subject (module)	Reference to directional effects (KEK)
EK_01	characterizes individual groups of therapeutic agents,	C.W34.
EK_02	knows the main mechanisms of action of drugs and their changes in the system depending on age,	C.W35.
EK_03	determines the influence of disease processes on the metabolism and elimination of medicines,	C.W36.
EK_04	knows the basic rules of pharmacotherapy,	C.W37.
EK_05	knows the more important side effects of medicines, including those resulting from their interaction,	C.W38.
EK_06	understands the problem of drug resistance, including multidrug drug resistance	C.W39.
EK_07	knows the indications for genetic tests carried out to individualize pharmacotherapy,	C.W40.
EK_08	knows the group of drugs whose abuse can lead to poisoning,	C.W43.

EK_09	performs simple pharmacokinetic calculations,	C.U13.
EK_10	selects drugs at appropriate doses to correct pathological phenomena in the body and in particular organs,	C.U14.
EK_11	correctly prepares records of all forms of prescription medicinal substances,	C.U16.
EK_12	uses pharmaceutical guides and databases on medicinal products,	C.U17.
EK_13	knows the rules of pharmaceutical law,	G.W11.
EK_14	recognizes the symptoms of drug dependence and proposes therapeutic treatment,	E.U19.
EK_15	interprets the pharmaceutical characteristics of medicinal products and critically assesses advertising materials regarding medicines,	E.U31.

### 3.3 CONTENT CURRICULUM (filled by the coordinator)

#### A. Lectures

Course contents
<ol style="list-style-type: none"> <li>1. Drugs used in diseases of the respiratory system. Principles of treatment of bronchial asthma and bronchospasm.</li> <li>2. Drugs used in diseases of the digestive system.</li> <li>3. Anticoagulants, thrombolytics and antiplatelet agents.</li> <li>4. The neurotransmitters of the central nervous system. Central mechanisms of drug action.</li> <li>5. Benzodiazepines and other anxiolytic drugs. Sleeping pills.</li> <li>6. Antipsychotic drugs.</li> <li>7. Antidepressants and mood stabilizers.</li> <li>8. Narcotic and non-narcotic analgesics. Principles of pain treatment.</li> <li>9. Non-steroidal anti-inflammatory drugs. Antipyretic drugs.</li> <li>10. Addiction to psychoactive substances and their treatment. Treatment of tobacco addiction syndrome.</li> </ol>

#### B. Exercises

Course contents
<ol style="list-style-type: none"> <li>1. Drugs used in diseases of the respiratory system (bronchodilators, antitussive, expectorants, mucolytics, anti-inflammatory, anti-infective agents). The rules of treatment of bronchial asthma.</li> <li>2. Drugs used in diseases of the digestive system (antiemetics, affecting gastrointestinal motility, antidiarrheal, laxative, anti-infective). Principles of treatment of gastroesophageal reflux disease and peptic ulcer disease. Treatment of Helicobacter pylori infections. Pharmacotherapy for inflammatory bowel diseases. Drugs used in liver diseases. Drugs used in diseases of the pancreas.</li> <li>3. Hematopoietic agents (growth factors, minerals, vitamins). Blood. Blood substitutes and blood derivatives. Drugs used to treat anemia. Anticoagulants. Fibrinolytics. Antiplatelet drugs.</li> <li>4. Neurotransmission in the central nervous system. Neuropeptides. Anesthetics, general and local. Principles of surgical anesthesia. Skeletal muscle relaxants.</li> <li>5. Calming drugs. Anxiolytics. Sleeping pills.</li> </ol>

6. Antipsychotic (neuroleptic) drugs.
7. Antidepressants. Principles of treatment of depressive disorders. Drugs stabilizing the mood.  
Test I (material from exercises 1-6).
8. Antiepileptic drugs. Rules for the treatment of epilepsy. Drugs used in degenerative diseases of the central nervous system (drugs in Parkinson's disease, Alzheimer's disease, Huntington's disease and amyotrophic lateral sclerosis).
9. Opioid analgesics. Pain therapy.
10. Other painkillers. Eicosanoids. Non-steroidal anti-inflammatory drugs. Antipyretic drugs. Drugs used in gout. Pharmacotherapy for rheumatoid arthritis.
11. Addiction to drugs and psychoactive substances. Pharmacotherapy for nicotine addiction. Ethanol.
12. Drugs used in ophthalmology.  
Test II (material from exercises 7-11)
13. Recent advances in pharmacology (part II).
14. Repetition of the recipe.
15. Repetition of the semester 3.  
Practical exam: a recipe (material from 3 semesters).

### 3.4 TEACHING METHODS

**Lecture:** Problem and information lecture with multimedia presentation.

**Exercises:** Working in groups. Solving tasks and clinical problems. Discussion. Analysis of clinical cases. Working with a database. Preparing a presentation.

## 4 METHODS AND EVALUATION CRITERIA

### 4.1 Methods of verification of learning outcomes

Symbol of effect	Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes)	Form of classes
EK_1	oral answer, colloquium, test exam	Lecture, Exercises
EK_2	oral answer, colloquium, test exam	Lecture, Exercises
EK_3	oral answer, colloquium, test exam	Lecture, Exercises
EK_4	oral answer, colloquium, test exam	Lecture, Exercises
EK_5	oral answer, colloquium, test exam	Lecture, Exercises
EK_6	oral answer, colloquium, test exam	Lecture, Exercises
EK_7	colloquium, written exam	Lecture, Exercises
EK_8	oral answer, colloquium, test exam	Lecture, Exercises
EK_9	test exam, written test	Exercises
EK_10	oral answer, colloquium, test exam	Lecture, Exercises
EK_11	oral answer, colloquium, test exam	Exercises
EK_12	oral answer, presentation	Exercises

EK_13	Oral answer	Exercises
EK_14	oral answer, colloquium, test exam,	Lecture, Exercises
EK_15	Oral answer	Exercises

#### 4.2 Conditions for completing the course (evaluation criteria)

<p>The condition for passing the subject is:</p> <ul style="list-style-type: none"> <li>- presence on all exercises and attendance at lectures</li> <li>- demonstration of knowledge and skills at least on a sufficient level as regards the material in accordance with the program (see substantive content)</li> <li>- demonstrating skills of critical analysis of acquired information and application of pharmacological knowledge in contact with the patient</li> <li>- obtaining at least a satisfactory grade from the final exam of the subject</li> </ul> <p>The grade from the pass will be the resultant of all learning outcomes, i.e. the knowledge, skills and social competences of the student will be based on internal regulations, which assumes gathering of partial points of students. The point score will include oral answers, written tests (eg in terms of recipes), final tests (minimum two per semester), assessment of activity (assessment of competences and attitudes). The condition for passing the subject and taking the final exam will be obtaining the minimum number of points determined in the regulations. The final mark in the semester will depend on the number of points obtained. Students who do not get the required minimum number of points will not be able to take the final exam and will have to pass all the material in the form of a test.</p> <p>Final exam: will take place after the end of the semester in the exam session. The exam will consist of a practical part (saving prescriptions) and a test exam. The test exam will have the character of a multiple-choice test and cover the whole issues of the pharmacology course. The criterion for a positive grade in the final exam is to give correct answers to at least 60% of the test questions. Detailed rules regarding the final exam (conditions, form, dates, evaluation criteria) will be included in the regulations.</p>
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#### 5. Total student workload required to achieve the desired result in hours and ECTS credits

Activity	Hours / student work
Hours of classes according to plan with the teacher	50
Preparation for classes	
Participation in the consultations	
The time to write a paper / essay	
Preparation for tests	
Participation in colloquia	
Student's own time	80
<b>SUM OF HOURS</b>	<b>130</b>

TOTAL NUMBER OF ECTS	4
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**6. TRAINING PRACTICES IN THE SUBJECT / MODUL**

Number of hours	
Rules and forms of apprenticeship	

**6. LITERATURE**

<p><b>READING:</b></p> <ol style="list-style-type: none"> <li>1. Brenner G. M., Stevens C. W., Farmakologia, 2010</li> <li>2. Wielosz M., Receptura dla studentów medycyny i stomatologii, 1998</li> </ol>
<p>Additional literature:</p> <ol style="list-style-type: none"> <li>1. Wojciech K., Zbigniew H., Farmakologia - podstawy farmakoterapii. Tom I i II, 2004</li> <li>2. Katzung B.G., Masters S.B., Trezorz A.J., pod red. Buczko W., Farmakologia ogólna i kliniczna, Tom I i II, 2012</li> <li>3. Mutschler E., Geisslinger G., Kroemer H.K, Ruth P., pod red. Buczko W., Farmakologia i toksykologia Mutschlera, 2012</li> <li>4. Rang H.P., Dale M.M., Ritter J.M., pod red. Mirowska D., Farmakologia Rang i Dale, 2014</li> <li>5. Korbut R., Olszanecki R., Wołkow P., Jawień J., Farmakologia, 2012</li> <li>6. Brunton L.L., Lazo J.S., Parker K.L. pod red. Buczko W., Farmakologia Goodmana &amp; Gilmana. Tom I i II, 2007</li> <li>7. Petruszewicz J., Gągało I., Hać E., Strzałkowska-Grad H., Farmakologia: zbiór pytań testowych dla studentów medycyny i stomatologii, 2002</li> <li>8. Nowak P, Herman Z.S., Brus R., Receptura dla lekarzy, studentów medycyny i stomatologii, 2005</li> <li>9. Danysz A., Buczko W., Kompendium farmakologii i farmakoterapii. Podręcznik dla studentów medycyny, 2008</li> </ol>

Acceptance Unit Manager or authorized person