



## Pharmacology

### 1. IMPRINT

<b>Academic Year</b>	2025/2026
<b>Department</b>	Faculty of Dental Medicine
<b>Field of study</b>	English Dentistry Division
<b>Main scientific</b>	Medical Science
<b>Study Profile</b>	General academic
<b>Level of studies</b>	Uniform Master's studies
<b>Form of studies</b>	Stationary
<b>Type of module / course</b>	Obligatory
<b>Form of verification of learning outcomes</b>	Exam
<b>Educational Unit / Educational Units</b>	Department of Experimental and Clinical Pharmacology Centre for Preclinical Research and Technology CePT, Banacha 1b, 02-927 Warsaw, tel. (+48) 22 1166160 e-mail: farmakologia@wum.edu.pl

**Załącznik nr 4C do Procedury opracowywania i okresowego przeglądu programów studiów**  
**(stanowiącej załącznik do zarządzenia nr 68/2024 Rektora WUM z dnia 18 kwietnia 2024 r.)**

<b>Head of Educational Unit / Heads of Educational Units</b>	Prof. Dagmara Mirowska-Guzel, MD, PhD Phone: (+48) 22 1166160
<b>Course coordinator</b>	Marcin Granat, MSc, e-mail: marcin.granat@wum.edu.pl
<b>Person responsible for syllabus</b>	Prof. Dagmara Mirowska-Guzel, MD, PhD Marcin Granat, MSc, e-mail: marcin.granat@wum.edu.pl
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## 2. BASIC INFORMATION

<b>Year and semester of studies</b>	III year, V and VI semester	<b>Number of ECTS credits</b>	7
<b>FORMS OF CLASSES</b>		<b>Number of hours</b>	<b>ECTS credits calculation</b>
<b>Contacting hours with academic teacher</b>			
Lecture (L)		15	0.6
Seminar (S)		30	1.2
Discussions (D)			
e-learning (e-L)			
Practical classes (PC)		30	1.2
Work placement (WP)		100	4
<b>Unassisted student's work</b>			
Preparation for classes and completions			

## 3. COURSE OBJECTIVES

O1	Learning the rules about rational pharmacotherapy
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O2	Understanding the basic benefits, adverse drug reactions and toxicity associated with pharmacotherapy
<b>4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING</b>	
<b>Code and number of effect of learning in accordance with standards of learning</b>	<b>Learning outcomes in the area of:</b>
<b>Knowledge – Graduate* knows and understands:</b>	
C.W9	The phenomenon of antibiotic resistance development
C.W18	Mechanisms of drug action, as well as the pharmacokinetics and biotransformation of individual drug groups
C.W19	Indications and contraindications for drug use, their dosing, adverse drug reactions and toxic effects, as well as drug interactions
C.W20	Rules of therapy for viral, bacterial, fungal, and parasitic infections
C.W21	Principles of preventing and managing pain and anxiety, as well as the pharmacology of drugs used in life-threatening conditions
C.W22	Principles of prescribing selected forms of ready-made and compounded medications on a prescription
<b>Skills– Graduate* is able to:</b>	
C.U2	Interpret the results of microbiological, serological tests, and antibiotic susceptibility tests (antibiograms)
C.U8	Select drugs in appropriate doses and prescribe medications according to indications
<b>5. ADDITIONAL EFFECTS OF LEARNING</b>	
<b>Number of effect of learning</b>	<b>Effects of learning i time</b>
<b>Knowledge – Graduate knows and understands:</b>	
K1	-
<b>Skills– Graduate is able to:</b>	
S1	-
<b>Social Competencies – Graduate is ready for:</b>	
SC1	Communicating to the patient, in a clear and accessible manner, the basic information regarding the effectiveness, limitations, and risks associated with therapy using commonly used drugs in dentistry

<b>6. CLASSES</b>		
<b>Form of class</b>	<b>Class contents</b>	<b>Effects of Learning</b>
Lectures	<p>L 1 – Lecture 1. Sources of information about drugs. During the lecture, the student learns which sources of information about drugs are reliable and which are less reliable. They become familiar with drug regulatory agencies and the basics of drug information contained in registration documents. The student also learns where to obtain the drug information necessary for everyday practice.</p>	C.W18., C.W19., SC1
	<p>L 2 – Lecture 2. Treatment in shocks. The student learns about the types of shock and the principles of its diagnosis, as well as proper selection of treatment methods and management of shock depending on its etiology.</p>	C.W18., C.W19., C.W21
	<p>L 3 – Lecture 3. Drugs used in the treatment of headaches. The student learns about the basic types of headaches and the drugs used for headache relief as well as migraine prophylaxis.</p>	C.W18., C.W19., C.W21
	<p>L 4 – Lecture 4. Drugs used in ischemic heart disease. During the lecture, the various groups of drugs used in ischemic heart disease are presented, both for treatment and for primary and secondary prevention, along with the general principles of prevention.</p>	C.W18., C.W19., C.W21
	<p>L5 – Lecture 5. Pharmacotherapy during pregnancy. The student learns about the principles of treatment during pregnancy and where to obtain information regarding the safety of drug use in pregnancy.</p>	C.W18., C.W19
	<p>L6 – Lecture 6. Plant-derived raw materials and dietary supplements. During the lecture, the most important and widely recognized plant substances used for medicinal purposes are presented, along with the limitations associated with their use and potential risks, including interactions with synthetic pharmaceutical products. Indications for the use of plant-derived products are also discussed. The student learns the main differences between medicinal products and dietary supplements.</p>	C.W18., C.W19
	<p>L7 - Lecture 7. Antiarrhythmic drugs The student learns about the groups of antiarrhythmic drugs and the basic principles of treating arrhythmias, with particular attention to the adverse effects of such treatment.</p>	C.W18., C.W19., C.W21
	<p>L8 – Lecture 8. Treatment of lipid disorders The student learns about the principles of treating lipid disorders and the drugs used in such therapy.</p>	C.W18., C.W19., C.W21
Seminars	<p>S1 – Seminar 1. General pharmacology. Rules of pharmacokinetics and pharmacodynamics. Pharmacokinetic parameters defined by the acronym LADME (Absorption, Distribution, Metabolism, Excretion), principles and mechanisms of drug action, and the basics of nomenclature in pharmacokinetics and pharmacodynamics.</p>	C.W18
	<p>S2 – Seminar 2. Pharmacology of gastrointestinal tract. Treatment of common gastrointestinal disorders: peptic ulcer disease, diarrhea,</p>	C.W18., C.W19

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	constipation, and <i>Helicobacter pylori</i> eradication.	
	S3 – Seminar 3. The respiratory system drugs. Drug groups used in bronchial asthma and chronic obstructive pulmonary disease. Information about expectorants and mucolytics. Their mechanisms of action and adverse effects.	C.W18., C.W19
	S4 – Seminar 4. Drugs used in general anaesthesia. Principles of management in premedication for general anesthesia and during general anesthesia. Drug groups used in anesthesiology, their mechanisms of action, efficacy, and adverse effects.	C.W18., C.W19
	S5 – Seminar 5. Drugs used in hypertension. Principles of hypertension therapy. Drug groups used in monotherapy and combination therapy for hypertension. Mechanisms of drug action, adverse effects, and contraindications.	C.W18., C.W19
	S6 – Seminar 6 - Non-narcotic analgesic drugs Basic indications for the use of narcotic analgesics. Mechanism of action, adverse effects, and management of overdose.	C.W18., C.W19., C.W21
	S7 – Seminar 7 - Narcotic analgesic drugs. Basic indications for the use of narcotic analgesics. Mechanism of action, adverse effects, and management of overdose.	C.W18., C.W19., C.W21
	S8-Seminar 8 – Cholinergic pharmacotherapy. Groups of drugs that stimulate and inhibit the parasympathetic nervous system. Indications, contraindications, and adverse effects of each drug group.	C.W18., C.W19
	S9 -Seminar 9- Drugs acting on sympathetic nervous system. Groups of drugs stimulating and inhibiting the sympathetic nervous system. Indications, contraindications, and adverse effects of drug groups acting on both alpha and beta receptors.	C.W18., C.W19
	S10-Seminar 10 – Drugs used in the treatment of diabetes. Principles of therapy for type 1 and type 2 diabetes. Types of insulin, their usage guidelines, and adverse effects. Groups of non-insulin antidiabetic drugs, mechanisms of action, and adverse effects.	C.W18., C.W19
	S11-Seminar 11 – Glucocorticosteroids. Drugs used in the treatment of thyroid disorders Mechanism of action of glucocorticosteroids, indications for their use, and adverse effects. Drug groups used in hypothyroidism and hyperthyroidism.	C.W18., C.W19
	S12-Seminar 12 - The gonadal hormones and inhibitors. Oral contraceptives. Content: Female and male gonadal hormones. Forms of contraceptives – indications, adverse effects, contraindications. Indications, adverse effects and contraindication of gonadal inhibitors.	C.W18, C.W19
	S13-Seminarium 13 – Drugs used in heart failure. Principles of heart failure therapy. Drug groups used in heart failure, their mechanisms of action, and adverse effects.	C.W18, C.W19

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	S14 – Seminarium 14 – Antihistamines and other drugs used in allergic conditions. First- and second-generation H1 receptor antihistamines and their adverse effects.	C.W18, C.W19
	S15 – Seminarium 15 – Central nervous system drugs (anxiolytics, antidepressants, antiepileptic drugs). Drug groups used in anxiety therapy. Mechanism of action of benzodiazepines, principles of their use, and management of overdose. Groups of antidepressant and antiepileptic drugs, their mechanisms of action, and adverse effects.	C.W18, C.W19
	S16 – Seminarium 16 – Central nervous system drugs (typical and atypical neuroleptics, drugs used in Parkinson’s disease therapy). Mechanism of action of typical and atypical neuroleptics, adverse effects associated with the use of each neuroleptic drug group. Principles of Parkinson’s disease therapy, drug groups used, and their adverse effects.	C.W18, C.W19
Practical classes	PC1-Practical classes 1- Disinfectants and antiseptics. Drugs used in dentistry. Basic principles of using disinfectants and antiseptics. Mechanisms of action of various drug groups and their adverse effects. Groups of drugs used in dentistry, their mechanisms of action, and adverse effects.	C.W5
	PC2-Practical class 2- Dental chemotherapy (antibacterial drugs acting on the bacterial cell wall). Mechanisms of drug resistance. Interpretation of antibiograms. Basic principles of chemotherapy use in dentistry. Groups of antibacterial drugs acting on the bacterial cell wall, including detailed mechanisms of action, antibacterial spectrum, and adverse effects. Principles of interpreting antibiograms.	C.W9, C.W18, C.W20, C.U2
	PC3-Practical class 3- Dental chemotherapy (antibacterial drugs acting on protein synthesis). Mechanisms of drug resistance. Interpretation of antibiograms. Groups of antibacterial drugs acting on protein synthesis, including detailed mechanisms of action, antibacterial spectrum, and adverse effects. Principles of interpreting antibiograms.	C.W9, C.W18, C.W20, C.U2
	CP4- Practical class 4 – Other antibacterial drugs. Mechanisms of drug resistance. Interpretation of antibiograms. Antibacterial drugs acting on nucleic acids and the cell membrane, including detailed mechanisms of action, antibacterial spectrum, and adverse effects. Principles of interpreting antibiograms.	C.W9, C.W18, C.W20, C.U2
	PC5 – Practical class 5 - Antifungal and antiparasitic drugs. Groups of drugs used in fungal and parasitic diseases, including detailed mechanisms of action, spectrum, and adverse drug reactions.	C.W9, C.W18, C.W20
	PC6 – Practical class 6 - Antiviral drugs. Groups of drugs used in viral diseases, including detailed mechanisms of action, spectrum, and adverse drug reactions.	C.W9, C.W18, C.W20
	PC7- Practical class 7 – Local anaesthetics. Principles of therapy using local anesthetics. Drug groups used in local anesthesia, their	C.W18, C.W19

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	mechanisms of action, and adverse effects.	
	PC8 – Practical classes 8 – Treatment of anemia. Drugs affecting blood coagulation. Principles of treatment of iron deficiency anemia and megaloblastic anemia. Drug groups used in anticoagulant, antiplatelet, and fibrinolytic therapy. Management of bleeding and drug groups that inhibit excessive bleeding.	C.W18, C.W19
	PC9 – Practical class 9 - Drug-induced changes in the oral cavity. Drugs used in bone diseases and mineral metabolism disorders. Types of adverse drug reactions. Drug groups that cause drug-induced changes in the oral cavity and the types of these changes. Basic principles of treating osteoporosis and other bone diseases, their mechanisms of action, and adverse drug reactions.	C.W18, C.W19
	PC10 – Practical class 10 – Drugs of emergency medical states Basic principles of treatment for selected emergency conditions. Types of drugs used in various acute clinical situations, including indications, contraindications, adverse effects, and dosing.	C.W18., C.W19, C.U8
	PC11 – Practical class 11 – Basics of prescription writing. Rules for prescribing ready-made (commercial) and magistral preparations in the form of e-prescriptions and paper prescriptions. Examples of how to write specific medications on a prescription.	C.W22., SC1

## 7. LITERATURE

### Obligatory

Katzung's Basic and Clinical Pharmacology, 16th Edition, McGraw Hill Education, 2023.

### Supplementary

Goodman and Gilman's The Pharmacological Basis of Therapeutics, red. Brunton L i wsp., 14th Ed., McGraw Hill Education, 2023.

Rang & Dale's Pharmacology, 10th Edition, James M. Ritter & Rod J. Flower & Graeme Henderson & Yoon Kong Loke & David MacEwan & Emma Robinson & James Fullerton, 2023.

## 8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
C.W5., C.W9., C.W18., C.W19., C.W20., C.W21., C.W22., C.U2, C.U8.,	After 5 <sup>th</sup> and 6 <sup>th</sup> semester there are the assessment test. The first and second term are single-choice test, the commission is oral. The passed test after 5 <sup>th</sup> and 6 <sup>th</sup> semester entitles the student to take an exam. The exam first term is single choice test, the second term and third term is commission oral.	>50%

## 9. ADDITIONAL INFORMATION

1. Seminars are obligatory.
2. Attending at seminars and lectures must be met with condition of being listed on the student list provided by Dean's Office or having written consent by designated Dean or Deputy Dean.

3. One absence at seminars and one absence at lectures during a semester is allowed.
4. In the case of a transfer from another university, it is necessary to promptly arrange with the Course coordinator the conditions for making up curriculum differences in the subject of pharmacology.
5. Applications regarding conditional participation in pharmacology classes, partial completion of the course, curriculum differences, or recognition of prior course may be submitted no later than during the first week of the academic classes. Applications submitted at a later date will be considered only in exceptional circumstances.
6. Applications for the recognition of a grade from another program may be considered only after prior approval by the Vice-Dean for Student Affairs, and no later than within the first two weeks of the academic classes.
7. Seminars missed for a justified reason must be caught up after arranging a date with the teacher conducting the classes. The time allowed for making up the missed classes is one month from the recorded date of absence.
8. All seminars and lectures will be provided in the electronic version by teachers responsible for particular topics. These materials will be delivered in the web site teams within 7 days after seminar or lecture.
9. All applications concerning the didactic problems should be addressed to Head of the Department: Professor Mirowska-Guzel and directed to the Coordinator. The decision is made by Head of the Department in the consultation with the Coordinator of the Pharmacology.
10. Office: Department of Experimental and Clinical Pharmacology, Centre of Preclinical Research and Technology CePT, Medical University of Warsaw, Banacha 1b, 02-097 Warsaw, Poland; open: Monday – Friday: 9 AM – 3 PM. Phone: (+48) 22 116 61 60, fax: (+48) 22 116 62 02 ; e-mail: farmakologia@wum.edu.pl

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**ATTENTION**

The final 10 minutes of the last class in the block/semester/year should be allocated to students'  
Survey of Evaluation of Classes and Academic Teachers