



TOTAL per year:													
Department of Pharmacology (Unit realizing the course)													
Direct (contact) education		20		45									
Distance learning	25												
Educational objectives (max. 6 items) C1. equipping students with knowledge of the rational pharmacotherapy principles, the benefits and risks associated with drugs' use; C2. acquisition by the students skills how to verify the sources of information about drugs and the evaluation (based on scientific evidences) of medical publications and advertisements about drugs C3. acquisition by the students skills of general concepts and issues of pharmacodynamics, pharmacokinetics and pharmacoeconomics C4. equipping students with knowledge of principles of drugs action and dosage, routes of administration, their mechanisms of action, pharmacological and clinical effects, basic pharmacokinetic properties, the indications, contraindications, adverse effects, and main interactions C5. acquisition by the students skills of determining the dosage of medicines in children and adults in various clinical conditions C6. equipping students with knowledge of the general rules of order writing and acquisition by the students skills of practical drug prescribing and orders for nurses													
Education result for course in relation to verification methods of the intended education result and the type of class:													
Number of detailed education result	Student who completes the course knows/is able to			Methods of verification of intended education results	Form of didactic class <i>*enter the abbreviation</i>								
C.W9	the phenomenon of emergence of drug resistance			test MCQ, MRQ, SBA, EMQ, oral answer, oral presentations	L, SE, MC								
C.W18	the mechanisms of action of drugs as well as pharmacokinetics and biotransformation of individual drug groups				L, SE, MC								
C.W19	indications and contraindications for drugs, their dosage, adverse and toxic effects and interactions between drugs				L, SE, MC								
C.W20	the principles of treatment of viral, bacterial, fungal and parasitic infections				L, SE, MC								
C.W21	the principles of pain and anxiety prevention and management as well as pharmacology of drugs used in life-threatening situations				L, SE, MC								
C.W22	the principles of writing down selected forms of ready-to-use and compounded drugs on a prescription				L, SE, MC								
D.W10	the mechanisms of addiction to psychoactive substances and the goals and options for treatment				L, SE, MC								
C.U8	select drugs in appropriate doses and prescribe medications as indicated			realization of assigned tasks and semester tests in drug calculations and prescribing, practical exam part in drugs' prescribing	MC								
* L- lecture; SE- seminar; AC- auditorium classes; MC- major classes (non-clinical); CC- clinical classes; LC- laboratory classes; CSC- classes in simulated conditions; PCP- practical classes with patient; FLC- foreign language course; PE- physical education; VP- vocational practice; DSS- directed self-study; EL- E-learning													

Student's amount of work (balance of ECTS points):	
Student's workload (class participation, activity, preparation, etc.)	Student Workload
1. Number of hours of direct contact:	65
2. Number of hours of distance learning:	25
3. Number of hours of student's own work:	180
4. Number of hours of directed self-study	
Total student's workload	270
ECTS points for course	6
Content of classes: (please enter topic words of specific classes divided into their didactic form and remember how it is translated to intended educational effects)	
<p>Lectures</p> <p><u>Winter semester (7 lectures of 90 minutes and 1 lecture of 45 minutes)</u></p> <ol style="list-style-type: none"> 1. General pharmacology – introduction, mechanisms of drugs action. 2. General pharmacology – LADME. 3. General pharmacology – pharmacokinetics, adverse effects and toxicity, variation of drugs action. 4. Autonomic nervous system – introduction. Neuromuscular pharmacology. Neuromuscular blocking drugs. Myorelaxants. Spasmolytics. 5. Adrenergic system (adrenoceptor agonists and antagonists). 6. Cholinergic system (acetylcholine receptor agonists and antagonists). 7. Autacoids. Treatment of allergy and headache disorders. 8. General anesthetics. <p><u>Summer semester (5 lectures of 90 minutes)</u></p> <ol style="list-style-type: none"> 1. Diuretics. Electrolyte disturbances. 2. Drugs for heart failure (CHF). 3. Drugs for hyperlipidemia. Drugs for coronary artery disease. 4. Antihypertensive drugs. Antiarrhythmics. 5. Anticoagulant, antiplatelet, and fibrinolytic drugs. <p><i>During the academic year, the order of the topics implemented may be changed.</i></p>	
<p>Seminars</p> <p><u>Winter semester (5 seminars of 90 minutes)</u></p> <ol style="list-style-type: none"> 1. Hypothalamic and pituitary drugs. Thyroid drugs. 2. Adrenal steroids and related drugs. Drugs affecting fertility and reproduction. 3. Drugs for diabetes mellitus. 4. Drugs affecting calcium and bone. Vitamin D. 5. Hematopoiesis (iron, vitamin B12, folic acid) and other vitamins. <p><u>Summer semester (5 seminars of 90 minutes)</u></p> <ol style="list-style-type: none"> 1. Sedative-hypnotic and anxiolytic drugs. 2. Antiepileptic drugs. 3. Psychotherapeutic drugs (antipsychotic drugs and antidepressants). 4. Neurodegenerative disorders. 5. Drugs of abuse. Medical sources of information (Summary of Product Characteristics usage). <p><i>During the academic year, the order of the topics implemented may be changed. During the seminars, the current knowledge from topics may be checked in various forms.</i></p>	
<p>Classes</p> <p><u>Winter semester (10 classes of 90 minutes)</u></p> <ol style="list-style-type: none"> 1. Regulation of classes. General rules of order writing. 2. NSAIDs, rheumatoid arthritis, gout. Paracetamol. Dosage forms of drugs. Drug calculations. 3. Opioid analgesics. Analgesic ladder. Dosage forms of drugs. Drug calculations. 4. Local anesthetics. Dosage forms of drugs. Drug calculations. 5. Drugs for gastrointestinal tract disorders. Dosage forms of drugs. Drug calculations. 	



6. Drugs for respiratory tract disorders. Dosage forms of drugs. Drug calculations.
7. Antineoplastic and immunomodulating agents. Dosage forms of drugs. Drug calculations
8. Practical training in drug calculation part 1. Management of anaphylactic shock.
9. Practical training in multiple choice test part 1. Review of basic pharmacokinetic calculations.
10. Summary and discussion about the drugs discussed in the semester. Possibility or retakes of tests.

Summer semester (7 classes of 135 minutes, 2 classes of 45 minutes and 1 class of 90 minutes)

1. Basis of rational antimicrobial chemotherapy and reasons for antimicrobial therapy failure. Dosage forms of drugs. Drug calculations.
2. Inhibitors of bacterial cell wall synthesis. Dosage forms of drugs. Drug calculations.
3. Inhibitors of bacterial protein synthesis. Dosage forms of drugs. Drug calculations.
4. Quinolones, antifolate drugs and other antimicrobial agents. Dosage forms of drugs. Drug calculations.
5. Tuberculostatics. Antiparasitic drugs (protozoa, helminths).
6. Antiviral drugs. Dosage forms of drugs. Drug calculations.
7. Antifungal drugs. Dosage forms of drugs. Drug calculations.
8. Practical training in multiple choice test part 2.
9. Practical training in drug calculation part 2.
10. Summary and discussion about the drugs discussed in the semester. Possibility for retakes of tests.

During the academic year, the order of the topics implemented may be changed. During the seminars, the current knowledge from topics may be checked in various forms.

Basic literature

1. Brenner GM: Pharmacology Saunders/Elsevier, 5th Ed, 2017

Additional literature and other materials

1. Rang and Dale's Pharmacology. HP Rang, MM Dale, JM Ritter, RJ Flower, Churchill Livingstone Elsevier, 9th Ed, 2019
2. Howland RD, Mycek MJ, Harvey RA, Champe PC: Lippincott's illustrated reviews: pharmacology, Lippincott Williams and Wilkins, 7th Ed, 2018

Preliminary conditions:

– passed final exams in physiology and microbiology from the 2nd year

Conditions to receive credit for the course:

Conditions for completing the individual classes/seminars/lectures:

To complete the individual class/seminar/lecture making the practical and theoretical assignments from the current lecture/seminar/class topics and/or previous topics are required.

Conditions for completing each semester:

Student is obliged to gain in each semester 1 positive mark from multiple choice test (25-50) and 1 positive mark from practical drug calculations (3-6 cases). All absences on planned didactic classes during the course, including Dean's hours or Rector's days, must be made up in a form set by the academic teacher.

To take the final exam:

Completing of classes at the date specified by the Rector in the ordinance regarding the organization of the academic year 2020/2021.

Final practical exam (drug calculation and order writing):

Final practical exam is written before theoretical test and is required to take theoretical part of the exam. To pass drug calculation test correct calculations and writing of the 3 examples of prescriptions or order for the nurse are required.

Final theoretical exam:

Final exam is in a form of multiple choice test (50-100 questions) in the first and second term. To pass the test 61% of correct answers are required. The level may be only decreased in some situations. Theoretical exam may be in written (open questions) or oral form (to pass the oral exam correct answers on all of 3 chosen questions are required) in case of a smaller number of students during the first or second retake or commission exam.

The examination for the grade or credit takes place in direct contact with the teacher. In justified cases, after the Rector's decision may take place with distant learning tools.



	Criteria for courses ending with a credit – MCQ test (1 answer and 4 distractors), drugs prescribing test, oral answer
Credit	1. at least 61% of points from each tests and drug prescribing (additionally no “fatal mistakes” in drug prescribing test)
No credit	1. less than 61% of points from each MCQ test 2. mistake in drug prescribing resulting in significant harm of potential death of the patient (so called “fatal mistake”) or less than 61% of points

Grade:	Criteria for exam - MCQ test (1 answer and 4 distractors), practical part in drug prescribing test (for credit)
Very Good (5.0)	at least 93% of correct answers
Good Above (4.5)	at least 85% of correct answers
Good (4.0)	at least 77% of correct answers
Satisfactory Plus (3.5)	at least 69% of correct answers
Satisfactory (3.0)	at least 61% of correct answers

Unit realizing the course:	Department of Pharmacology
Unit address:	Jana Mikulicza-Radeckiego 2, 50-345 Wrocław
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Person responsible for the course:	Anna Merwid-Ląd, MD, PhD
Telephone:	71-784-1442
E-Mail:	anna.merwid-lad@umed.wroc.pl

List of persons conducting specific classes:

Name and surname	Degree/scientific or professional title	Discipline	Performed profession	Form of classes
Anna Merwid-Ląd	MD, PhD	medical science	academic tutor	lectures, seminars
Beata Nowak	MD, PhD, DSc,	medical science	academic tutor	classes
Tomasz Sozański	MD, PhD, DSc, WMU prof.	medical science	academic tutor	classes



Date of Syllabus development

21.06.2021

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Syllabus developed by

Anna Merwid-Łąd

Agnieszka Matuszewska

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Signature of Head(s) of teaching unit(s)

Uniwersytet Medyczny we Wrocławiu
KATEDRA / ZAKŁAD FARMAKOLOGII

prof. dr hab. Adam Szelaż

Dean's signature

Uniwersytet Medyczny we Wrocławiu
WYDZIAŁ
LEKARSKO-STOMATOLOGICZNY
DZIEKAN

..... prof. dr hab. Marcin Mikulewicz