UNIWERSYTET MEDYCZNY
IM. PIASTÓW ŚLĄSKICH WE WROCŁAWIU

Appendix
to Resolution No. 2186
of Senate of Wroclaw Medical University
of 1 July 2020

Syllabus 2020/2021
Training cycle 2018-2014

Description of the course

Module/Course	**Pharmacology and toxicology**	**Group of detailed education results**	
		Group code: C	**Group name: preclinical science**
Faculty	**Medicine**		
Major	medicine		
Unit realizing the subject	**Department of Pharmacology**		
Specialties	Not applicable		
Level of studies	**Uniform magister studies X** 1st degree studies ☐ 2nd degree studies ☐ 3rd degree studies ☐ postgraduate studies ☐		
Form of studies	**X full-time** ☐ part-time		
Year of studies	III	**Semester**	**X Winter** **X Summer**
Type of course	**X obligatory** ☐ limited choice ☐ free choice / elective		
Course	☐ major **X basic**		
Language of instruction	☐ Polish **X English** ☐ other		

* mark ☐ with an **X**

Number of hours

Form of education

Unit teaching the course	Lectures (L)	Seminars (SE)	Auditorium classes (AC)	Major Classes – not clinical (MC)	Clinical Classes (CC)	Laboratory Classes (LC)	Classes in Simulated Conditions (CSC)	Practical Classes with Patient (PCP)	Specialist Classes – magister studies (SCM)	Foreign language Course (FLC)	Physical Education obligatory (PE)	Vocational Practice (VP)	Self-Study (Student's own work)	E-learning (EL)
Winter Semester														
Direct (contact) education				**22,5**										
Online learning (synchronous)	**30**			**22,5**										
Distance learning (asynchronous)														
Summer Semester														
Direct (contact) education				**22,5**										
Online learning (synchronous)	**30**			**22,5**										

Distance learning (asynchronous)														
TOTAL per year: 150														
Direct (contact) education				45										
Online learning (synchronous)	60			45										
Distance learning (asynchronous)														

Educational objectives (max. 6 items)

C1. to familiarize students with the principles of rational pharmacotherapy, presenting the benefits and risks associated with drug use

C2. to teach students how to verify the sources of information about drugs and the evaluation (based on scientific evidences) of medical publications and advertisements about drugs

C3. to teach students general concepts and issues of pharmacodynamics, pharmacokinetics and pharmacoeconomics

C4. to teach students the 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. to teach students determining the dosage of medicines in children and adults in various clinical conditions

C6. to teach students the general rules of order writing and practical drug prescribing and orders for nurses

Education result matrix for module/course in relation to verification methods of the intended education result and the type of class

Number of course education result	Number of major education result	Student who completes the module/course knows/is able to	Methods of verification of intended education results (forming and summarizing)	Form of didactic class ***enter the abbreviation*
K01, K02, K03	**C.W.35,**	characterizes separate groups of therapeutic agents;	written or oral exam, test, oral answer, oral presentation, practical training in multiple choice tests	L+MC
	C.W.36,	knows the main mechanisms of drugs' action and their changes in the system depending on age;		
	C.W.37,	determines the influence of disease on the metabolism and elimination of drugs;		
	C.W.38,	knows the basic rules of pharmacotherapy;		
	C.W.39,	knows important adverse effects of drugs, including those resulting from their interaction;		
	C.W.40,	understands the problem of drug resistance, including multidrug drug resistance;		

	C.W.41,	knows the indications for genetic tests carried out to individualize pharmacotherapy;		
	C.W.42,	knows the basic directions of therapy development, knows the possibilities of cell therapy and gene therapy and targeted therapy in specific diseases;		
	C.W.43,	knows the basic concepts in the field of general toxicology;		
	C.W.44,	knows groups of drugs which use can lead to poisoning;		
	C.W.45	knows the symptoms of the most common acute poisoning, including alcohol, drugs and other psychoactive substances, heavy metals and selected drug groups;		
	C.W.46	knows the basic principles of diagnostic procedures in poisoning;		
	C.W.48	knows the consequences of vitamin or mineral deficiency and excess in the body		
S01, S02	**C.U.13,**	performs simple pharmacokinetic calculations;	The student calculates without help basic pharmacokinetic parameters, prescribes correctly drugs and orders for drugs based on provided sources of information considering patient's age and state what is verified during classes (own work at the board) and in individual written form during classes and	MC
	C.U.14,	orders drugs at appropriate doses to correct pathological phenomena in the body and in particular organs;		
	C.U.15,	designs a scheme of rational chemotherapy, empirical and targeted;		
	C.U.16,	correctly prescribes all forms of prescription of medicinal substances;		
	C.U.17,	uses pharmaceutical guides and databases on medicinal products;		
	C.U.18,	estimates toxicological hazard in specific age groups and in liver and kidney failure, and knows how to prevent drug poisoning;		

	C.U.19	interprets the results of toxicological tests	during the practical part of the exam	

** L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning.

Please mark on scale 1-5 how the above effects place your classes in the following categories: communication of knowledge, skills or forming attitudes:

Knowledge: +++

Skills: ++

Student's amount of work (balance of ECTS points)

Student's workload (class participation, activity, preparation, etc.)	**Student Workload (h)**
1. Contact hours:	45
2. Online learning hours (-learning):	105
3. Student's own work (self-study):	135
Total student's workload	285
ECTS points for module/course	9,5
Comments	

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)

Lecture – winter semester (15 x 90 minutes) – 30 lecture hours

1. General pharmacology - introduction
2. General pharmacology - LADME
3. General pharmacology – LADME – cont., pharmacokinetics
4. General pharmacology - variation in drugs' action. Adverse and toxic reactions
5. Autonomic nervous system – physiology, drugs acting on ganglia, endogenous catecholamines
6. Autonomic nervous system – synthetic adrenomimetics, adrenolytics
7. Autonomic nervous system – cholinergic system
8. Hormones of hypothalamus, pituitary gland. Hormones of thyroid gland and antithyroid drugs.
9. Insulin and other hypoglycemic drugs
10. Hormones of adrenal gland (glucocorticoids, mineralocorticoids, adrenocortical antagonists)
11. Bone homeostasis.
12. Sex hormones.
13. Iron and hematopoiesis
14. Respiratory tract
15. Gastrointestinal tract

Lectures – summer semester (14 x 97 minutes) – 30 lecture hours

1. Diuretics
2. Lipid-lowering drugs
3. Heparins, oral anticoagulants. Antiplatelet drugs. Thrombolytic agents.
4. Therapy of chronic heart failure (RAA system - ACEI, ARB, RI, cardiac glycosides and other inotropic agents)
5. Therapy of ischemic heart disease (BB, CCB, vasodilators)
6. Therapy of arterial hypertension. Pulmonary hypertension.
7. Antiarrhythmic drugs.
8. Eicosanoids. NSAIDS. Non-opioid analgesics. Therapy of gout and rheumatoid arthritis.
9. Opioid analgesics and antagonists.
10. Autacoids – histamine, serotonin and ergot alkaloids.

11. Vitamins, mineral substances.
12. Toxicology. Therapeutic and toxic potential of OTC drugs. Herbal preparations and dietary supplements.
13. Selected aspects of drug-induced toxicity.
14. Selected aspects in pharmacology – review lecture.

During the academic year, the order of the topics implemented may change.

Classes – winter semester (15 x 135 minutes) – 45 lecture hours

1. Regulations of the classes and lectures in Pharmacology and Toxicology. General rules of order writing. Drug development and regulation.
2. Introduction to chemotherapy - clinical use of antimicrobial agents (Chapter 51). Management of anaphylactic shock. Dosage forms of drugs. Drug calculations.
3. Cell wall synthesis inhibitors and daptomycin. Dosage forms of drugs. Drug calculations.
4. Protein synthesis inhibitors. Dosage forms of drugs. Drug calculations.
5. Quinolones, sulphonamides, co-trimoxazole. Other antimicrobial drugs. Antimycobacterial drugs. Dosage forms of drugs. Drug calculations.
6. Antifungal drugs. Dosage forms of drugs. Drug calculations.
7. Antiviral drugs. Dosage forms of drugs. Drug calculations.
8. Practical training in multiple choice tests – part 1. Dosage forms of drugs. Drug calculations.
9. Antiprotozoal drugs. Anthelmintic drugs. Dosage forms of drugs. Drug calculations.
10. Anticancer chemotherapy. Dosage forms of drugs. Drug calculations.
11. Immunomodulators. Biological treatment and gene therapy. Dosage forms of drugs. Drug calculations.
12. Review class of theory. Dosage forms of drugs. Drug calculations
13. Practical training in multiple choice tests – part 2. Dosage forms of drugs. Drug calculations – review.
14. Practical training in drug calculations and prescription writing – part 1. Antiseptics.
15. Summary and discussion about the drugs discussed in the semester. Possibility for retakes of tests.

Classes – summer semester (15 x 135 minutes) – 45 lecture hours

1. General anesthetics. Dosage forms of drugs. Drug calculations.
2. Local anesthetics. Dosage forms of drugs (local anesthetics). Drug calculations.
3. Spasmolytics, myorelaxants, drugs affecting neuromuscular transmission. Dosage forms of drugs. Drug calculations.
4. The alcohols and drugs abuse. Dosage forms of drugs. Drug calculations.
5. Antipsychotic drugs and lithium. Dosage forms of drugs. Drug calculations.
6. Mood disorders, antidepressants. Drug calculations.
7. Review class. Dosage forms of drugs. Drug calculations.
8. Practical training in multiple choice tests – part 3. Dosage forms of drugs. Drug calculations.
9. Hypnotic-sedative and anxiolytic drugs. Dosage forms of drugs. Drug calculations.
10. Neurodegenerative disorders. Dosage forms of drugs. Drug calculations.
11. Antiepileptic drugs. Dosage forms of drugs. Drug calculations.
12. Review class. Dosage forms of drugs. Drug calculations.
13. Practical training in multiple choice tests – part 4. Dosage forms of drugs. Drug calculations – review.
14. Practical training in drug calculations and prescription writing – part 2. Review of basic pharmacokinetic calculations.
15. 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 change.

Basic literature (list according to importance, no more than 3 items)

1. Basic & Clinical Pharmacology, Katzung BG, Mc Graw Hill, 14th Ed

2. Katzung & Trevor's Pharmacology Examination and Board Review, 12th Ed

Additional literature and other materials (no more than 3 items)

3. Brenner GM: Pharmacology Saunders/Elsevier, 5th Ed,
4. Rang and Dale's Pharmacology. HP Rang, MM Dale, JM Ritter, RJ Flower, Churchill Livingstone Elsevier, 8th Ed
5. Howland RD, Mycek MJ, Harvey RA, Champe PC: Lippincott's illustrated reviews: pharmacology, Lippincott Williams and Wilkins, 6th Ed

Didactic resources requirements: multimedia projector, interactive board

Preliminary conditions (minimum requirements to be met by the student before starting the module/course) – basic knowledge of selected aspects in anatomy, physiology, pathophysiology, microbiology and biochemistry

Conditions to receive credit for the course (specify the form, criteria and conditions of receiving credit for classes included in the module/course, admission terms to final theoretical or practical examination, its form and requirements to be med by the student to pass it and criteria for specific grades).

Conditions for completing the individual classes:

Presence on didactic classes (contact and distant) is obligatory and making the practical and theoretical assignments from the current lecture/seminar/class topics and/or previous topics. Conditions for completing each semester: Besides required presence on all didactic meetings student is obliged to gain in each semester 2 positive marks from multiple choice test (25-50 questions), 1 positive mark from practical drug calculations (3-6 examples) and 1 positive mark from oral answer.

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 theoretical exam:

Final exam is in a form of test 50-100 questions in the first term and during the first retake. 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 e.g. first or second retake or commission exam.

Final practical exam (drug calculation and order writing):

Final practical exam is written before theoretical test an 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 orders for the nurse are required.

Grade:	Criteria for passing the course with a grade
Very Good (5.0)	4,75 - 5,0
Good Plus (4.5)	4,25 - 4,74
Good (4.0)	3,75 - 4,24
Satisfactory Plus (3.5)	3,25 - 3,74
Satisfactory (3.0)	over 2,0 - 3,24 and it is necessary to obtain at least 2 positive marks from multiple choice test, 1 positive mark from practical drug calculations 1 positive mark from oral answer in each semester
	Criteria for passing the course for credit (no grade)
Credit	Does not apply to the Faculty of Medicine

Grade:	Criteria for exam (if applicable)
Very Good (5.0)	from 93% points
Good Plus (4.5)	from 85% points
Good (4.0)	from 77% points
Satisfactory Plus (3.5)	from 69% points
Satisfactory (3.0)	from 61% points

Name of unit teaching course:	Department of Pharmacology
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Person responsible for course:	Anna Merwid-Ląd, MD, PhD
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List of persons conducting specific classes:

Full name	degree/scientific or professional title	Discipline	Performed profession	Form of classes
Anna Merwid-Ląd	MD, PhD	medical science	academic tutor	lectures, classes
Beata Nowak	MD, PhD	medical science	academic tutor	classes
Tomasz Sozański	MD, PhD, prof. WMU	medical science	academic tutor	classes
Monika Skrzypiec-Spring	MD, PhD	medical science	academic tutor	classes
Dorota Ksiądzyna	MD, PhD	medical science	academic tutor	classes

Date of Syllabus development

28.09.2020

Syllabus developed by

Anna Merwid-Ląd

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Beata Nowak

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Signature of Head of teaching unit

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