INFORMATION ABOUT THE COURSE

Pharmacology with toxicology

1. Basic information

Field of studies field of medical and health sciences, discipline: medical sciences **Unit responsible for the field of studies** Faculty of Medicine Bydgoszcz University of Science and Technology **Level of studies** Uniform master's studies **Profile of studies** General academic **Form of studies** Full-time	**Studies cycle** …….. **Course code** 17-EMS-PWT-SP1 17-EMS-PWT-SP2 **Language** English **Obligatory** Yes

Prerequisites	Students must have basic knowledge of biology and chemistry, including understanding the structure and function of cells and chemical compounds, which is essential for understanding the effects of drugs and toxins. Verification of prerequisites in the form of entrance tests.
Introductory courses	Biochemistry
Coordinator	Assoc. Prof. Beata Jędrzejewska; Krzysztof Goryński, PhD

Study period	**Form of assessment** **Form and hours of classes**	**ECTS credits**
Winter semester	Passing with a grade Lecture 35h Exercise 35h	5.0
Summer semester	Exam Lecture 35h Exercise 35h	5.0

2. Learning outcomes

Code	**Description of learning outcomes**	**Learning outcomes reference**
Knowledge (student knows and understands):		
K1	The graduate knows and understands the individual groups of medicinal products, their mechanisms and effects of action, basic indications and contraindications, and basic pharmacokinetic and pharmacodynamic parameters	C.W28.
K2	The graduate knows and understands the physiological and pathological conditions of absorption, metabolism, and elimination of drugs by the human body	C.W29.
K3	The graduate knows and understands the basic principles of pharmacotherapy, taking into account its effectiveness and safety, the	C.W30.

	need to individualize treatment, including that resulting from pharmacogenetics	
K4	The graduate knows and understands the more important adverse effects of drugs, interactions, and the problem of polypharmacy	C.W31.
K5	The graduate knows and understands the problem of drug resistance, including multidrug resistance, and the principles of rational antibiotic therapy	C.W32.
K6	The graduate knows and understands the basic concepts in the field of general toxicology	C.W34.
K7	The graduate knows and understands the groups of drugs whose abuse may lead to poisoning	C.W35.
K8	The graduate knows and understands the symptoms of the most common acute poisonings with selected groups of drugs, alcohol and other psychoactive substances, fungi and heavy metals	C.W36.
Abilities (student can do/perform):		
A1	The graduate is able to perform simple pharmacokinetic calculations	C.U8.
A2	The graduate is able to select drugs in appropriate doses to correct pathological phenomena in the human body and in individual organs	C.U9.
A3	The graduate is able to design schemes of rational chemotherapy of infections - empirical and targeted	C.U10.
A4	The graduate is able to prepare records of prescription forms of selected medicinal substances and issue prescriptions, including e-prescriptions, in accordance with the provisions of the law	C.U11.
A5	The graduate is able to search for reliable information on medicinal products, with particular emphasis on the characteristics of medicinal products (ChPL) and databases	C.U12.
A6	The graduate is able to estimate the toxicological risk in specific age groups and in states of liver and kidney failure and prevent drug poisoning. G.W11.: The graduate knows and understands the basic regulations in the field of pharmaceutical law, including the principles of trade in medicinal and medical products, issuing prescriptions, including e-prescriptions, reimbursement of medicines, cooperation between a doctor and a pharmacist, reporting adverse drug reactions	C.U13.
Social skills (the student is ready to):		
S1	The graduate is ready to notice and recognize their own limitations, make self-assessment of deficits and educational needs	O.K5.
S2	The graduate is ready to use objective sources of information	O.K7.
S3	The graduate is ready to formulate conclusions based on their own measurements or observations	O.K8.

3. Programme contents

No.	Programme contents	Form of studies	Learning outcomes covered by the programme content
1	Winter semester Introduction to Pharmacology - definition, purpose and tasks. Characteristics of a medicinal product. Origin and nomenclature of drugs; biological drugs. original and generic drugs. Groups of drugs, active substances contained in drugs and forms and routes of drug administration. Basic issues related to the action of drugs. Types of drug action (local - general, central - peripheral, selective - non-selective, reversible - irreversible, causal - symptomatic). Adverse drug effects. Drug tolerance and addiction. Pharmacodynamics, Pharmacokinetics, therapeutic drug monitoring.	Lecture	K1, K2, K3, K4, K5, K6, K7, K8
2	Winter Semester Using pharmaceutical information guides and databases on medicinal products. Types of drug action; dose, types of doses, dosing regimens. Prescription. Prescription elements. General principles of prescribing drugs. Practical solution of prescription tasks. General pharmacology with elements of pharmacodynamics. Pharmacokinetics. Vitamins and bioelements	Exercise	A1, A2, A3, A4, A5, A6, S1, S2, S3
3	Summer semester Autacoids. Hormones and hormonal drugs part I – hypothalamus pituitary, adrenal cortex hormones. Hormones and hormonal drugs part II – thyroid hormones and drugs used in thyroid dysfunction, diabetes and drugs used in carbohydrate metabolism disorders Hormones and hormonal drugs part III – sex hormones, drugs used in menopause and andropause, contraceptives, calcium-phosphate metabolism Autonomic system drugs. Drugs used in pain management General and local anesthetic drugs Anti-depressive and anti-psychotic drugs Neurodegenerative diseases. Epilepsy. Addictions Drugs used in coronary artery disease, drugs in heart failure Antiarrhythmic drugs	Lecture	K1, K2, K3, K4, K5, K6, K7, K8

	Drugs in hemostasis disorders Antiplatelet drugs, antiatherosclerosis drugs Drugs used in respiratory diseases Drugs used in digestive system diseases Drugs used in excretory system diseases Antibiotic therapy (antibiotics) Chemotherapeutics Antifungal drugs, antiviral drugs Anti-cancer immunosuppressive drugs Drug interactions		
4	Summer Semester Adverse drug reactions. Basics of toxicology. Procedures in poisoning - general information. Selected poisonings. Drugs of the autonomic and central nervous systems. Pain medications. Pharmacology of the circulatory system, hematology. Drugs of the respiratory system. Drugs of the digestive system. Chemotherapy, immunopharmacology. Drug interactions.	Exercise	A1, A2, A3, A4, A5, A6, S1, S2, S3

4. Methods of verifying and assessing the learning outcomes achieved by the student

Winter semester

Form of studies		
Lecture	**Methods of studies form:**	
	Lecture	
	Methods of verification:	**Involvement:**
	Test	100%
	Conditions for passing the course:	
	Single choice test (50-100 questions, scored 1 point for a correct answer). Test duration - 60-90 minutes. The student is entitled to two terms of passing: term I and resit term.	
Exercise	**Methods of studies form:**	
	Discussion, Calculation exercises	
	Methods of verification:	**Involvement:**

	Test	100%
	Conditions for passing the course:	
	Attendance at classes, obtaining a positive grade from partial tests covering the exercise material. The final grade is a weighted average of the grades from partial tests in accordance with the Study Regulations.	

Summer semester

Form of studies		
Lecture	**Methods of studies form:**	
	Lecture	
	Methods of verification:	**Involvement:**
	Written exam	100%
	Conditions for passing the course:	
	Exam: syllabus content of exercises, syllabus content of lectures Single-choice test (80-100 questions, scored 1 point for a correct answer - minimum 60% of correct answers). Test duration - 90 minutes. The student is entitled to two exam dates: date I and a resit term. The student is admitted to the exam based on passing the exercises.	
Exercise	**Methods of studies form:**	
	Discussion, Project, Case study, Group work	
	Methods of verification:	**Involvement:**
	Test	50%
	Presentation	50%
	Conditions for passing the course:	
	Presentation on a given topic and written examination - multiple choice test - minimum 60% correct answers and/or colloquium - open-ended questions.	

Learning outcomes	**Methods of verification**		
	Test	Written exam	Presentation
K1	X	X	x
K2	X	X	
K3	X	X	

K4	X	X	
K5	X	X	
K6	X	X	X
K7	X	X	X
K8	X	X	X
A1	X		
A2	X		
A3	X	X	
A4	X		
A5	X	X	X
A6	X	X	
S1			X
S2			X
S3			X

5. Student workload – balance of hours and ECTS credits

Students activity		**Student workload Number of hours**
Classes conducted with the direct participation of an academic teacher or other persons conducting classes	Lecture	70
	Exercise	70
Student's own work	Preparing for classes	30
	Preparing a presentation	15
	Studying literature	30
	Preparing for a test	20
	Preparing for an exam	20
Total student workload		255
ECTS		10

One (teaching) hour is 45 minutes.

6. Literature

The list of required and recommended literature will be provided by the lecturer at the first meeting.