JAGIELLONIAN UNIVERSITY
MEDICAL COLLEGE

Pharmacology

Educational subject description sheet

Basic information

Department Faculty of Medicine	**Didactic cycle** 2016/17
Field of study Medical Program	**Realization year** 2017/18, 2018/19
Study level long-cycle master's degree program	**Lecture languages** English
Study form full-time	**Block** obligatory for passing in the course of studies
Education profile general academic	**Mandatory** obligatory
Disciplines Medical science	**Examination** examination
Subject related to scientific research Yes	**Standard group** C. Preclinical course

Subject coordinator	Jacek Jawień
Lecturer	Jacek Jawień, Barbara Lorkowska-Zawicka, Leszek Drabik, Paweł Wołkow, Andrzej Jakubowski, Renata Korbut, Magdalena Bartuś, Beata Bujak-Giżycka

Period	**Examination**	**Number of ECTS points**
Semester 4	credit **Activities and hours** seminar: 25, lecture: 25	4.0

Period	**Examination**	**Number of ECTS points**
Semester 5	- **Activities and hours** lecture: 23, seminar: 22	0.0

Period Semester 6	**Examination** examination **Activities and hours** seminar: 23, lecture: 22	**Number of ECTS points** 9.0

Goals

C1	several groups of drugs
C2	main mechanisms of drug action and its transformation in organsim, dependindg af age
C3	effect of pathological influense on drug metabolism
C4	basic rules of pharmacotherapy
C5	main unwanted action of drugs, deriving from their interlaction
C6	drug resistance, including multidrugresistace
C7	indication for genetical reaeach in acheiwement of individuallisation of therapy
C8	main fieds of therapeutics future, including possibilities of cell therapy, gene tharapy and induction therapy
C9	main subcject from general toxicology
C10	grups of drugs, overuse of which can lead to toxicity
C11	symptoms of the most common drug toxicity
C12	how to treat poisoning

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	basic rules of pharmacotherapy	C.W38	test, multiple choice test, credit
W2	more important side effects of medicines, including those resulting from their interaction	C.W39	test, multiple choice test, credit
W3	the problem of drug resistance, including multi-drug drug resistance	C.W40	test, multiple choice test, credit
W4	indications for genetic tests performed with the aim of individualizing pharmacotherapy	C.W41	test, multiple choice test, credit
W5	basic directions of therapy development, in particular the possibilities of cellular, gene and targeted therapy in specific diseases	C.W42	test, multiple choice test, credit
W6	basic concepts of general toxicology	C.W43	test, multiple choice test, credit
W7	groups of medicines, the abuse of which can lead to poisoning	C.W44	test, multiple choice test, credit
W8	symptoms of the most common acute poisoning, including alcohol, drugs and other psychoactive substances, heavy metals and selected groups of drugs	C.W45	test, multiple choice test, credit

W9	basic principles of diagnostic procedures in poisoning	C.W46	test, multiple choice test, credit
Skills – Student can:			
U1	use pharmaceutical guides and databases on medicinal products	C.U17	test, multiple choice test, credit
U2	assess toxicological hazards in specific age groups and in conditions of hepatic and renal failure, and prevent drug poisoning	C.U18	test, multiple choice test, credit
U3	interpret the results of toxicological tests	C.U19	test, multiple choice test, credit
U4	prepare records of all forms of prescription medicinal substances	C.U16	test, multiple choice test, credit
U5	design schemes of rational chemotherapy of infections, empirical and targeted ones	C.U15	test, multiple choice test, credit
U6	perform simple pharmacokinetic calculations	C.U13	test, multiple choice test, credit
U7	select drugs at appropriate doses in order to correct pathological phenomena in the system and in individual organs	C.U14	test, multiple choice test, credit
Social competences – Student is ready to:			
K1	use objective sources of information	O.K7	test, multiple choice test, credit
K2	promote health-promoting behaviors	O.K6	test, multiple choice test, credit

Calculation of ECTS points

Semester 4

Activity form	**Activity hours***
seminar	25
lecture	25
preparation for classes	50
Student workload	**Hours** 100
Workload involving teacher	**Hours** 50

* hour means 45 minutes

Semester 5

Activity form	**Activity hours***
lecture	23

seminar	22
preparation for classes	50
Student workload	**Hours** 95
Workload involving teacher	**Hours** 45

* hour means 45 minutes

Semester 6

Activity form	**Activity hours***
seminar	23
lecture	22
preparation for classes	50
preparation for examination	100
Student workload	**Hours** 195
Workload involving teacher	**Hours** 45

* hour means 45 minutes

Study content

No.	**Course content**	**Subject's learning outcomes**	**Activities**
1.	Pharmacodynamics	W1, W5, U1, U6, K1, K2	seminar, lecture
2.	Pharmacokinetics	W1, W2, U1, K1, K2	seminar, lecture
3.	Chemical mediators in autonomic nervous system - cholinergic transmission - cholinergic agonists and antagonists - neuromuscular blocking drugs - autonomic ganglia drugs	W1, W2, W6, W7, W8, U1, U3, U7, K1	seminar, lecture
4.	Adrenergic transmission - adrenergic receptors - adrenoceptor agonists and antagonists	W1, W2, W7, W8, U1, U2, U3, U4, U5, U6, U7, K1	seminar, lecture
5.	Local hormones (autacoids) in inflammation and allergy - histamine, serotonin Nitric oxide and drugs.	W1, W2, W5, U1, U7, K1	seminar, lecture

6.	Bradykinin, angiotensin II, ACEI, ARB, Endothelin and its blockers.	W1, W2, W5, U1, U7, K1	seminar, lecture
7.	Eicosanoids and PAF (platelet activating factor) - drugs connected with eicosanoids	W1, W2, W4, W5, W7, W8, U1, U2, U7, K1	seminar, lecture
8.	Non-steroidal anti-inflammatory drugs - treatment of gout - treatment of rheumatoid arthritis	W1, W2, W3, W4, W5, W6, W7, W8, W9, U1, U2, U3, U4, U5, U6, U7, K1, K2	seminar, lecture
9.	Chemical transmission in the central nervous system - classification of psychotropic drugs Non-therapeutic drugs (alcohol, others)	W6, W7, W8, W9, U7	seminar, lecture
10.	Anxiolytic and hypnotic drugs. Opioids. Treatment of pain.	W7, W8, U1, U2, U7, K1	seminar, lecture
11.	General anaesthesia agents. Local anaesthetic drugs.	W1, W2, W3, W7, W8, W9, U1, U2, U7, K1	seminar, lecture
12.	Neuroleptic drugs and drugs used in affective disorders.	W1, W2, W3, W4, W5, W7, U1, U2, U7, K1, K2	seminar, lecture
13.	Treating of motor disorders: epilepsy and Parkinsonism.	W1, W8	seminar, lecture
14.	Central nervous system stimulants and psychomimetics. Cannabinoids, LSD, heroine, amphetamine, cocaine. Treatment of drug abuse.	W1, W2, W3, W5, W7, U1, U2, U7, K1	seminar, lecture
15.	Basic principles of chemotherapy - sulphonamides Antibacterial agents Cell wall synthesis inhibitors (penicillin, cephalosporin, monobactams, carbapenems).	W1, W7, U1, U4, U7, K1	seminar, lecture
16.	Inhibitors of bacterial protein synthesis (tetracyclines, macrolides, aminoglycosides, chloramphenicol, other antibiotics) Fluoroquinolones Antifolate drugs.	W1, W2, W3, U1, U2, U5, U7, K1, K2	seminar, lecture
17.	Antimycobacterial agents - treatment of tuberculosis and leprosy Antifungal drugs.	W1, W2, W3, U1, U2, U5, U7, K1, K2	lecture
18.	Antiviral drugs. Antiprotozoal drugs and anthelminthic drugs.	W1, W2, W3, U1, U2, U5, U7, K1, K2	lecture
19.	Cancer chemotherapy. Progress in cancer immunotherapy.	W1, W2, W3, U1, U2, U5, U7, K1, K2	seminar, lecture
20.	The endocrine system - anterior pituitary hormones - hypothalamic hormones	W1, W2, W3, U1, U2, U7, K1, K2	seminar, lecture
21.	Thyroid and parathyroid hormones.	W1, W2, W3, U1, U2, U7, K1, K2	seminar
22.	Adrenal steroids and related drugs The reproductive system - estrogens, androgens, anabolic hormones, contraceptives.	W1, W2, W3, U1, U2, U7, K1, K2	seminar, lecture

23.	Diabetes Mellitus. Insulin Oral hypoglycaemic agents.	W1, W2, W3, U1, U2, U7, K1, K2	seminar, lecture
24.	Treatment of diarrhea, constipation, nausea vomiting. Treatment of gastroesophageal reflux disorder (GERD), role of H2 receptors.	W1, W2, W3, W4, W5, U1, U2, U5, U7, K1, K2	lecture
25.	Peptic ulcers, antiacids; antisecretory drugs.	W1, W2, W3, U1, U2, U7, K1, K2	lecture
26.	Agents used to treat liver and pancreas disorders; inflammatory bowel disease, hepatitis.	W1, W2, W3, U1, U2, U7, K1, K2	lecture
27.	Diuretics, antidiuretic drugs.	W1, W2, W3, W5, U1, U2, U7, K1, K2	seminar, lecture
28.	Diseases of respiratory tract. Bronchodilator agents; agents used to treat asthma.	W1, W2, W3, W4, W5, U1, U2, U7, K1, K2	seminar, lecture
29.	Decongestants; cough suppressants; antimicrobial agents used to treat patients with respiratory tract infections.	W1, W2, W3, W4, W5, U1, U2, U7, K1, K2	seminar, lecture
30.	Anemia. Drugs affecting hematopoiesis Septicemia, bacteremia Blood and blood products.	W1, W2, W4, W5, U1, U2, U7, K1, K2	seminar, lecture
31.	Introduction to cardiovascular pharmacology Treatment of congestive heart failure and acute heart failure.	W2, W3, W6, W7, W8, W9, U1, U2, U3, U7, K1, K2	lecture
32.	Antiarrhythmic drugs. Resuscitation, treatment of shocks. Endocarditis.	W1, W2, U6, K1	seminar, lecture
33.	Pharmacology of coagulation, fibrinolytic drugs.	W1, W2, W3, W4, W5, W6, W7, W8, W9, U1, U2, U3, U4, U5, U6, U7, K1, K2	lecture
34.	Pharmacology of platelets and endothelium. Antiplatelet drugs.	W1, W2, W3, W4, W5, W6, W7, W8, W9, U1, U2, U3, U4, U5, U6, U7, K1, K2	seminar, lecture
35.	Classification of anti-hypertensive drugs, current concepts in treatment of hypertension. Basic and clinical pharmacology of ACE inhibitors and angiotensin receptor antagonists, adrenolytics, diuretics, calcium channel blockers, potassium channels openers, direct vasodilators.	W1, W2, W3, W4, W5, W6	lecture
36.	Atherothrombosis – current concepts on prevention and treatment. Drugs used in the treatment of hyperlipidemias Basic and clinical pharmacology of statins, fibrates, niacin, resins. Cholesterol-independent, pleiotropic effects of hypolipemic drugs.	W1, W2, W3, W4, W5, W6, W7, W8, W9, K1, K2	seminar, lecture
37.	Drugs used in the treatment of ischemic heart disease. Acute coronary syndrome (myocardial infarction).	W1, W2, W3, W4, W5, W6, W7, W8, W9, U1, U2, U3, U4, U5, U6, U7, K1, K2	lecture

Course advanced

Semester 4

Teaching methods:

discussion, seminar, lecture

Activities	Examination methods	Credit conditions
seminar	multiple choice test	solving partial tests: I-II
lecture	credit	attendance

Semester 5

Teaching methods:

case study, discussion, seminar, lecture

Activities	Examination methods	Credit conditions
lecture	credit	attendance
seminar	multiple choice test	solving partial tests: III-IV

Semester 6

Teaching methods:

case study, classes / practicals, discussion, seminar, lecture

Activities	Examination methods	Credit conditions
seminar	test	writing partial tests V-VI
lecture	multiple choice test	For those who will magnage over 80% from 6 test - they can be realeased from Final Examination Test (90 questions).

Entry requirements

basic knowledge of pharmacology

Literature

Obligatory

1. Bertram G. Katzung. Basic and Clinical Pharmacology. 14th Edition, 2013

Optional

1. Lippincott Illustrated Reviews: Pharmacology by Karen Whalen 2013

Standard effects

Code	Content
C.U13	perform simple pharmacokinetic calculations
C.U14	select drugs at appropriate doses in order to correct pathological phenomena in the system and in individual organs
C.U15	design schemes of rational chemotherapy of infections, empirical and targeted ones
C.U16	prepare records of all forms of prescription medicinal substances
C.U17	use pharmaceutical guides and databases on medicinal products
C.U18	assess toxicological hazards in specific age groups and in conditions of hepatic and renal failure, and prevent drug poisoning
C.U19	interpret the results of toxicological tests
C.W38	basic rules of pharmacotherapy
C.W39	more important side effects of medicines, including those resulting from their interaction
C.W40	the problem of drug resistance, including multi-drug drug resistance
C.W41	indications for genetic tests performed with the aim of individualizing pharmacotherapy
C.W42	basic directions of therapy development, in particular the possibilities of cellular, gene and targeted therapy in specific diseases
C.W43	basic concepts of general toxicology
C.W44	groups of medicines, the abuse of which can lead to poisoning
C.W45	symptoms of the most common acute poisoning, including alcohol, drugs and other psychoactive substances, heavy metals and selected groups of drugs
C.W46	basic principles of diagnostic procedures in poisoning
O.K6	promote health-promoting behaviors
O.K7	use objective sources of information