Attachment to the Ordinance of the Rectorno 186/WST/2018

Subject name
Pharmacology and Toxicology/

ECTS Code

Name of unit teaching the subject
THE ZBIGNIEW RELIGA FACULTY OF MEDICAL SCIENCES IN ZABRZE, THE UNIVERSITY OF TECHNOLOGY IN KATOWICE

Studies

Field of study	degree	mode	major	specialization
medical	Uniform Master's	Stationary/non-stationary		

Surname of instructor (instructors)

Type of class, method of implementation and specified number of hours

A.Type of class
- **lecture,**
- **exercise classes,**
- clinical exercise classes
- seminars,
- **design classes**
- laboratories,
- lectureship,
- diploma seminar,
- professional internship.*

* mark where applicable

B.Method of implementation
- **classes in a didactic room**
- **on-line classes/*blended learning***
- classes outside the didactic room (in this case must specify where they are held)

C. Amount of hours in accordance with the approved curriculum
60h of lectures and 120h of exercise classes

Semester 05 – 30h of lectures and 60h of exercise classes
Semester 06 – 30h of lectures and 60h of exercise classes

Amount of ECTS points

Description of awarding ECTS points:

Activity	Student workload
Participation in lectures	60 hours
Participation in practical classes	120 hours
Preparation for practical classes and colloquiums	20 hours
Examination preparation	20 hours
Consultations	15 hours
Total number of hours	235 hours / 30
Amount of ECTS points per module	**8 ETCS**

Didactic cycle
Semester 05 and 06

Subject status
- **mandatory** / facultative

Language of instruction
Polish
Overview of medical databases in English

Didactic methods
Lectures,
Tests,
Ability to prescribe medication
Presentations
Discussion on clinical cases – case study

Forms and methods of passing and general grading criteria or examination requirements

A. Method of passing
- examination
- practical assessment*

* mark where applicable

B. Forms of passing:

- **written examination: test** / with open questions (exercises)/longer written statement
- **receiving credit for a test**
- oral examination
- oral test/colloquium
- completion of a semester assignment: preparation of a design or presentation/conducting research and presenting its results(written/oral)/completion of a specified practical work
- **credit for written work – prescriptions, pharmacokinetic calculations**
- **agreeing on a passing grade based on partial grades received during the course of the semester***

* mark where applicable

C. Basic grading criteria

Grades and examination requirements are individually specified and should correspond to the educational effects

Definition of preparatory subjects and initial requirements

Familiarity with anatomy, biochemistry, physiology, pathophysiology, microbiology

Subject aim

1. The aim of the subject is to acquire knowledge about medications and their impact on the functioning of various systems and organs in the human organism
2. The students become familiar with the pharmacological effects of groups of medications and the resulting indications and contraindications as well as principal harmful side effects
3. Students become familiar with the typical symptoms of overdosing on medication and drug poisoning and methods of treatment.
4. The aim of the learning process of General Pharmacology is also to prepare the students to acquire the practical skills to perform simple pharmacokinetic calculations, calculating the dosage of various forms of medications as well as techniques of writing prescriptions for ready-made drugs and compounded drugs
5. During the course the students also become familiar with the principles of using pharmacological manuals and databases of medical products.

Curriculum

Lectures

1. Path of drugs in the system, cellular and molecular mechanisms of their functioning, harmful and toxic effects of drugs, interactions between drugs and contraindications. Polypharmacy and combination therapy. Pharmacological terms and calculations
2. Antibiotic therapy part 1 – the use of beta-lactam antibiotics (penicillin, cephalosporin, monobactam, carbapenem) in therapy. Mechanisms of antibiotic functioning
3. Antibiotic therapy part 2 – Clinical application of: macrolides, glycopeptides, tetracyclines, sulfonamides, imidazole derivatives, quinolones, and polypeptide antibiotics
4. Antibiotic therapy part 3 – empirical antibiotic therapy of selected infections. Antibiotic interactions, Bacteria resistance mechanisms. Pathogenic alert – treatment. New antibiotics. Antibiotic registration. Combining antibiotics.
5. Antibiotic therapy part 4 – antifungal, antitubercular, antiparasitic, antiviral medications
6. Noradrenergic transmission. Drugs of the autonomic nervous system – the sympathetic nervous system (catecholamines, alpha receptor antagonists)
7. Cholinergic transmission. Drugs of the autonomic nervous system – the parasympathetic nervous system
8. Transmitters in the central nervous system. Amino acid transmitters and other transmitters and modulators in the CNS. Antidepressant drugs part 1 (MAO, TCA inhibitors)
9. Antidepressant drugs part 2 (SSRI, SNRI, mood stabilizers)
10. Antipsychotic drugs. Antiepileptic drugs, anti-Parkinson drugs
11. Tranquilizers, soporific drugs, muscle relaxants, anxiolytics. Drugs in neurodegenerative diseases (Parkinson's disease, Alzheimer's disease), nootropics
12. Painkillers. Opioid and non-steroid anti-inflammatory drugs. Local administration of non-steroid and anti-inflammatory drugs
13. General and local anesthesia drugs
14. Hormonal drugs part 1 – adrenal cortex hormones, sex hormones
15. Hormonal drugs part 2 – antidiabetic drugs, drugs used in osteoporosis, in treatment of lipid dysfunctions.

Antiatherosclerotic drugs
16. Inhibitors: anti-hemorrhagic, anticoagulant, antiplatelet drugs. Drugs used in blood diseases
17. Drugs used in diseases of the circulatory system part 1
18. Drugs used in diseases of the circulatory system part 2
19. Drugs use in diseases of the digestive system
20. Drugs used in diseases of the respiratory system
21. Dietary supplements and special-use dietary agents

Exercise classes
Content

1. Recipe – principles of prescribing ready-made and compounded drugs part 1
2. Recipe – principles of prescribing ready-made and compounded drugs part 2. Medical databases and information about medicines
3. Pharmacokinetics – basic terminology, principles of pharmacokinetic and pharmacoeconomic calculations
4. Practical antibiotic therapy – clinical cases
5. Noradrenergic transmission. Drugs of the autonomic nervous system the sympathetic nervous system (catecholamines, alpha receptor antagonists) Cholinergic transmission. Drugs of the autonomic nervous system – the parasympathetic nervous system
6. Drugs of the cardiovascular system – clinical cases regarding pharmacotherapy of arterial hypertension and coronary heart disease
7. Cardiovascular drugs – clinical cases regarding antiarrhythmic treatment heart failure, shock, myocardial infarction
8. Analgesic treatment – treatment of postoperative and chronic pain
9. Treating diabetes and lipid dysfunctions – clinical cases
10. Diseases of the digestive system – clinical cases
11. Diseases of the respiratory system – clinical cases
12. Treating diseases of the nervous system, medications used in the treatment of psychiatric diseases
13. General and local anesthetics – principles of clinical behavior
14. Cancer therapy in practice
15. Acute poisoning including by alcohol, drugs, psychoactive substances, heavy metals, and selected groups of drugs – symptoms, treatment, basic terminology in toxicology

The content of lectures and exercise classes is connected with each other

During exercise classes practical elements will also be shown (clinical cases corresponding to the topic of classes)

During classes the students, in the form of discussion, will discuss the practical application of medications with regards to a specific patient. In addition he will become familiar with principles of prescribing ready-made and compounded drugs as well as auxiliary medicinal products

At the end of the semester a practical examination will be conducted which will cover the principles of prescribing medication and using medical databases

Literature

A. Literature required to receive a final credit for classes (pass an exam):

Basic Literature

1. Korbut R. (ed.) Farmakologia, Warszawa, 2017, PZWL (2nd edition)
2. Interna Szczeklika 2019, Medycyna Praktyczna
3. Korbut R., (ed.) Farmakologia. Recepty., Kraków, 2009, Wydawnictwo UJ (1st edition)

B. Supplementaryliterature

1. Członkowski A., Okopień B. – Rang i Dale FARMAKOLOGIA, Wrocław, 2014, Elsevier Urban & Partner [2nd edition]
2. Korbut R. (ed.) Farmakologia. Repetytorium, Warszawa, 2017, PZWL (1stedition)

Educational effects:

Effect no	Description of an educational effect	
Knowledge:		

W1	C.W35 Characterizes individual groups of therapeutic agents	
W2	C.W36 Knows the principal mechanisms of functioning of drugs and their transformations in the system depending on age	Written examination, practical written examination, presentation, oral response, solving of practical prescription problems. Discussion and solving clinical problems in groups **L (Lecture) + NE (non-clinical exercise classes**
W3	C.W37 Defines the influence of disease processes on the metabolism and the elimination of medicines	
W4	C.W38 Knows the basic principles of pharmacotherapy	
W5	C.W39 Knows the main harmful side effects of drugs, including those resulting from their interactions	
W6	C.W40 Understands the problems of drug resistance including multiple drug resistance	
W7	C.W41 Knows the indications for genetic examinations with the aim of individualizing pharmacotherapy	
W8	C.W42 Knows the basic paths of development of pharmacotherapy, especially the possibilities of cellular therapy, gene therapy, and targeted therapy for specific diseases	
W9	C.W43 Knows the basic terminology of general toxicology	
W10	C.W44 Knows groups of drugs , whose abuse may lead to poisoning	
W11	C.W45 Knows the symptoms of the most common acute poisonings, including those by alcohol, narcotics, psychoactive substances, heavy metals, as well as selected groups of drugs	
W12	C.W46 Knows the basic principles of diagnostic treatment in poisoning	
Abilities:		
U1	C.U13 Performs simple pharmacological calculations	Written examination, practical written examination, presentation, oral response, solving of practical prescription problems. Discussion and solving clinical problems in groups **L (Lecture) + NE (non-clinical exercise classes**
U2	C.U14 Selects drugs in proper dosages with the aim of correcting pathological phenomena in the system and in individual organs	
U3	C.U15 Designs the chart of rational chemotherapy of infections, empirical and targeted chemotherapy	
U4	C.U16 Can prepare the record of all forms of prescriptions for therapeutic agents	
U5	C.U17 Uses pharmaceutical manuals and databases about medicinal products	
U6	C.U18 Can estimate the toxicological risk in specified age groups as well as conditions of liver and kidney failure, and prevent drug poisoning	
U7	C.U19 Interprets the results of toxicological examinations	
Social competencies:		
K1	Recognizes his own diagnosis and treatment limitations, educational needs, plans his educational activities	**NE (non-clinical exercise classes**
K2	Can work in a professional team, in a multi-cultural and multi-national environment	

Criteria of evaluating educational effects			
Educational effect	**For a grade of 3**	**For a grade of 4**	**For a grade of 5**
W1 **W2** **W3** **W4** **W5** **W6** **W7, W8, W9, W10, W11, W12** **U1, U2, U3, U4, U5, U6, U7** **K1, K2**	The final examination consists of 100 multiple choice questions In order to receive a credit for the examination a student must complete at least 61% of it correctly Insufficient (2.0) – below 61% Sufficient (3.0) – 61-69% Satisfactory (3.5) – 70-76% Good (4.0) – 77-84% Very Good (4.5) – 85-92% Excellent (5.0) – 93-100% A final credit for the subject is an arithmetic average of all partial grades received from individual tests (test questions) Excellent – 4.75-5.0 Very Good – 4.25-4.74 Good – 3.75-4.24 Satisfactory – 3.25-3.74 Sufficient – 2.1-3.24 The practical examination is based on the correct filling out of a minimum of 3 prescriptions (out of 5 drawn at random)s		