

FACULTY OF CHEMISTRY					
SUBJECT CARD					
Name of subject in Polish:	Leki nieorganiczne				
Name of subject in English:	Inorganic drugs				
Main field of study:	Chemistry				
Specialization:	Medicinal Chemistry				
Profile:	academic				
Level and form of studies:	2nd level, full-time				
Kind of subject:	obligatory				
Subject code:	CHC024065				
Group of courses:	NO				
	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	15				
Number of hours of total student workload (CNPS)	30				
Form of crediting	Crediting with grade				
For group of courses mark (X) final course					
Number of ECTS points	1				
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes	0.5				
PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES 1. Principles of inorganic chemistry.					
SUBJECT OBJECTIVES C1 To provide student with inorganic biologically active compounds and their influence on human metabolism. C2 To provide student with issues regarding the use of inorganic compounds in the field of medicine and pharmacy.					
SUBJECT EDUCATIONAL EFFECTS Relating to knowledge: PEK_W01 - has knowledge about the influence of water and electrolytes on vital functions in the human body, PEK_W02 – has knowledge about the inorganic compounds used as organic biologically active ingredients (API) and as the excipients in pharmaceutical formulations, PEK_W03 - has knowledge about the influence of inorganic substances on the bioavailability of API with therapeutic properties, PEK_W04 – has general knowledge about current development directions and the latest discoveries regarding the use of inorganic compounds in therapy and diagnostics, PEK_W05 – can distinguish particular groups of inorganic drugs and determine their use and therapeutic effect.					
PROGRAMME CONTENT					
Lectures				Number of hours	
Lec1	Water and electrolytes balance, the basis of the physiology of the human body. Effects of water and electrolytes deficits, methods of their supplementation.			2	
Lec2	Water purity class for the pharmaceutical industry. Buffers in drug formulations.			2	

Lec3	Inorganic compounds as the excipients of the pharmaceutical formulations.	2
Lec4	Inorganic salts for pharmaceutical purposes. The influence of inorganic salts on bioavailability of organic biologically active pharmaceutical ingredients (API).	2
Lec5	Medical diagnostics with the use of inorganic complexes and radioisotopes (MRI, MRA, PET, SPECT).	2
Lec6	Discovery of cisplatin, synthesis, its mechanism of anticancer activity and the path to obtaining next generations of drugs based on platinum.	2
Lec7	Search for non-platinum anticancer drugs with the interesting biological properties (drugs based on: Pd, Ti, Ga, As, Ru, Bi, V, Au).	2
Lec8	Final test.	1
	Total hours	15

TEACHING TOOLS USED

N1. Lecture with multimedia presentation.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect achievement
P (lecture)	PEK_W01 – PEK_W05	Final Test. 5.5 if 96-100%

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Alfred Fahr, Voigt's Pharmaceutical Technology. John Wiley & Sons Inc., 2018.
- [2] E. Alessio (Ed.) Bioinorganic Medicinal Chemistry, Wiley-VCH, 2011
- [3] J.C. Dabrowiak Metals in Medicine. Wiley, 2009.

SECONDARY LITERATURE:

- [4] Nicholas P. Farrell, Uses of inorganic chemistry in medicine, RSC, 1999.
- [5] EudraLex, The Rules Governing Medicinal Products in the European Union, Volume 4, EU Guidelines for Good Manufacturing Practice for Medicinal Products for Human and Veterinary Use, European Commission, health and consumers directorate-general, Ref. Ares(2012)778531 - 28/06/2012.
- [6] J.L.Sessler, S.R.Doctrow, T.J.McMurry, S.J.Lippard, Medicinal Inorganic Chemistry 2005.
- [7] Metallopharmaceuticals I, DNA Interactions Eds. M.J. Clarke, P.J. Sadler (1999).
- [8] Metallopharmaceuticals II, Diagnosis and Therapy. Eds. M.J. Clarke, P.J. Sadler (1999).

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

dr inż. Izabela Pawlaczyk-Graja, izabela.pawlaczyk@pwr.edu.pl
dr inż. Magdalena Malik-Gajewska, magdalena.malik-gajewska@pwr.edu.pl