



Pomeranian Medical University in Szczecin

SYLLABUS of the MODULE (Medical Chemistry) General Information

Module title: Chemistry	
Module type	Obligatory
Faculty PMU	Faculty of Medicine and Dentistry
Major	Dentistry
Level of study	full-time studies
Mode of study	
Year of studies, semester	I/I
ECTS credits (incl. semester breakdown)	3
Type/s of training	Lectures 5h, seminars 8h, practical 12h
Form of assessment*	<input checked="" type="checkbox"/> graded assessment: <ul style="list-style-type: none"> <input type="checkbox"/> descriptive <input checked="" type="checkbox"/> test <input checked="" type="checkbox"/> practical <input type="checkbox"/> oral <input type="checkbox"/> non-graded assessment <input type="checkbox"/> final examination <ul style="list-style-type: none"> <input type="checkbox"/> descriptive <input type="checkbox"/> test <input type="checkbox"/> practical <input type="checkbox"/> oral
Head of the Department/	Maria Dąbkowska, Ph. D., D.Sc.

*replace into where applicable

Clinic, Unit	
Tutor responsible for the module	Maria Dąbkowska, Ph. D., D.Sc. maria.dabkowska@pum.edu.pl
Department's/ Clinic's/ Unit's website	The Independent Laboratory of Pharmacokinetic and Clinical Pharmacy https://www.pum.edu.pl/studenci/informacje_z_jednostek/wfbmiml/samodzielna_pracownia_farmakokinytyki_i_farmacji_klinicznej/
Language	English

Detailed information

Module objectives		<p>The purpose of teaching medical chemistry is to prepare students to learn and understand the metabolic processes presented in the course of medical studies. Students will become familiar with basic issues of bioinorganic, bioorganic, physical, and analytical chemistry. Students will learn the approximate relationship between the structure, chemical properties, and function of compounds found in living organisms. Teaching begins with a discussion of the chemical bonds stabilizing chemical structure. Then, the properties of water and solutions as the dominant component of the human body are widely discussed. Emphasis is placed on familiarizing students with the basics, including calculation, fluid and electrolyte balance, and acid-base balance.</p> <p>Other issues of bioinorganic chemistry are associated with the analysis of the mineral composition of the human body, with particular emphasis on the properties of the microelements, trace, or toxic elements to living organisms.</p> <p>During the course of the study, students will learn the basics of practical work in the chemical laboratory and elements of qualitative, quantitative, and instrumental analysis of organic and inorganic compounds.</p>
Prerequisite /essential requirements	Knowledge	Having a knowledge of chemistry at the high school level
	Skills	Ability to self-study in a targeted manner
	Competences	Ability to work effectively in a team

Description of the learning outcomes for the subject /module			
No. of learning outcome	Student, who has passed the (subject) knows /is able to /can:	SYMBOL (referring the standards)	Method of verification of learning outcomes*
W01	knows and understands importance of main and trace elements in processes within human body with regard to intake, absorption and transport	B.W1	W,K
W02	knows and understands importance of electrolytes, buffer systems and chemical reactions in biological systems	B.W2	
W03	knows and understands the biochemical foundations of the integrity of the human body	B.W3	
W04	knows and understands the structure and functions of important chemical compounds found in the human body	B.W4	
W05	knows and understands principles of acid-base equilibrium and transport of oxygen and carbon	B.W21	

	dioxide in human body		
U01	knows how to refers chemical phenomena to processes going on in oral cavity	BU1	SL,PS
U02	knows how to use physical processes appropriate for the work of a dentist	BU3	
K01	recognizes its own limitations, self-assessing deficits and educational needs	K5	
K02	formulates conclusions from own measurements or observations	K8	

Table presenting LEARNING OUTCOMES in relation to the form of classes

No. of learning outcome	Learning outcomes	Type of training						
		Lecture	Seminar	Practical classes	Clinical classes	Simulations	E-learning	Other...
W01	B.W1	X	X	X				
W02	B.W2	X	X	X				
W03	B.W3	X	X	X				
W04	B.W4	X	X	X				
W05	B.W21	X	X	X				
U01	BU1			X				
U02	BU3			X				
K01	K5			X				
K02	K8			X				

Table presenting TEACHING PROGRAMME

No. of a teaching programme	Teaching programme	No. of hours	References to learning outcomes
Winter semester			
Lectures			
TK01	Water in human organism and osmotic pressure	1	W01, W04, U01, U02, K01
TK02	Molecular compounds and chemical bonds	2	W02, W03, U01, K01, K02
TK03	Ionic compounds, Free radical and antioxidants in medicine	2	W03, W04, U01, K01, K02
Seminars			
TK01	Matter and measurements	1	W01, W02, U02, K01, K02
TK02	Computational tasks: calculations of various type of concentration	2	W01, W03, U01, U02, K01
TK03	Ionic compounds	1	W01, W02, W04, W05, K01, K02
TK05	Homogenous mixture: solutions and colloids	1	W02, W03, W05, U01, K01
TK06	Acid-base balance	1	W02, W04,

			W05, U01, U02, K01
TK07	Chemical reactions: rates and equilibrium	2	W03, W05, U01, K01
Practical classes			
TK01	Qualitative Analysis of Inorganic Cations.	3	W01, U01, K01, K02
TK02	Qualitative Analysis of Inorganic Anions.	3	W02, W04, U01, U02, K01, K02
TK03	Solutions and Colloids: Donnan Equilibrium and Properties of Colloidal Systems.	3	W02, W04, U01, U02, K01, K02
TK04	Acid–Base Balance and Buffer Systems: Principles of Equilibrium.	3	W02, U01, U02, K01, K02
Booklist			
Obligatory literature:			
1. <i>Fundamentals of General, Organic, and Biological Chemistry</i> , J.McMurry, D.S. Ballantine, C.A. Hoeger, V.E. Peterson, publ. Pearson Education Limited			
Supplementary literature:			
1. <i>Chemistry: The Study of Matter and its Changes</i> , J.E. Brady 2. <i>Handbook of Chemistry for Students</i> Faculty of Medicine and Faculty of Dentistry, I. Kałnik-Prastowska, publ. Wrocław Medical University			

Student's workload	
Form of student's activity (in-class participation; activeness, produce a report, etc.)	Student's workload [h]
	Tutor
Contact hours with the tutor	25
Time spent on preparation to seminars/ practical classes	4
Time spent on reading recommended literature	20
Time spent on writing report/making project	6
Time spent on preparing to colloquium/ entry test	20
Time spent on preparing to exam	-
Other	-
Student's workload in total	75
ECTS credits for the subject (in total)	3
Remarks	

* Selected examples of methods of assessment:

EP – written examination
EU –oral examination
ET – test examination
EPR – practical examination
K – colloquium
R – report
S – practical skills assessment
RZC – practical classes report, incl. discussion on results
O –student's active participation and attitude assessment
SL –lab report
SP – case study
PS - assessment of student's ability to work independently
W – entry test
PM – multimedial presentation
other...