UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN
Faculty of Medicine

Course sylabus – part A
Chemistry

48SJO-CHEMIS
ECTS: 3.00
CYCLE: 2024

SUBJECT MATTER CONTENT

TEACHING OBJECTIVE

To transfer knowledge on the structure, properties and functions of basic chemical components of tissues and the human body fluids; To become acquainted with the chemical basis of the mechanisms of homeostasis and the chemical composition of biological fluids with particular emphasis on the human body fluids; To prepare students to use modern sources of information and their practical application; To perform chemical calculations; To draw conclusions based on the results of performed experiments; To use basic laboratory methods and techniques employed in laboratory diagnostics; To shape the right ethical attitudes and the ability to properly communicate; To support the skills of effective teamwork; To finally acquire by the student the knowledge and skills necessary to understand the subjects pursued in further education (i.e. biochemistry, molecular biology, physiology), necessary in future professional practice.

DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:

Symbols for outcomes related to the discipline:	M/NMA_P7S_WG+++, M/NMA_P7S_ UW+++, M/ NMA_P7S_KO+++
Symbols for outcomes related to the field of study:	B.W1.+++, K.5+, K.8.+, B.U3.+++, K.7.+

LEARNING OUTCOMES:

Knowledge:

W1 – Describes the water and electrolyte balance in biological systems and the role of macro- and microelements for the human body; Knows the mechanisms of acid-base balance, as well as the composition and properties of buffers as elements of homeostasis;
W2 – Properly interprets and understands the concepts of solubility, osmotic pressure, isotonic solutions, colloidal solutions and Gibbs-Donnan equilibrium;
W3 – Knows the basic reactions of inorganic and organic compounds in aqueous solutions;
W4 – Describes the chemical structures of simple organic compounds that are part of macromolecules present in cells, extracellular matrix and the human body fluids.

Skills:

U1 – Calculates molar and percentage concentrations of chemical

Legal acts specifying learning outcomes: 467/2024
Disciplines: medical sciences
Status of the course: Obligatoryjny
Group of courses:A - przedmioty podstawowe
Code: ISCED 0912
Field of study: Medicine
Scope of education: Medicine
Profile of education: General academic
Form of studies: full-time
Level of studies: uniform master's studies
Year/semester: /1

Types of classes: Lecture, Laboratory classes
Number of hours in semester: Lecture: 9.00, Laboratory classes: 26.00
Language of instruction: English
Introductory subject: Not applicable.
Prerequisites: Chemistry knowledge at a high-school level.

Name of the organisational unit conducting the course: Katedra Chemii
Person responsible for the realization of the course:prof. dr hab. inż. Bogusław Pierożyński
e-mail: boguslaw.pierozynski@uwm.edu.pl

Additional remarks:

compounds/substances in isosmotic, single and multi-component solutions; Calculates the solubility of chemical compounds; Determines the chemical basis of the solubility of organic compounds or its absence along with its biological significance;
U2 – Defines the factors affecting the acid-base balance of the human body; Determines pH of the solutions and the effect of pH changes on inorganic and organic compounds; Calculates the buffer capacity;
U3 – Uses basic laboratory techniques, such as qualitative analysis, titration, colorimetry and pH measurements; Understands the principles of analytical methods using UV-VIS spectroscopy and the use of calibration curves;
U4 – Plans and performs laboratory tests; Is able to efficiently work in a team and critically interprets the results obtained in the experiments.

Social competence:

K1 – Perceives and recognizes his/her own limitations and self-assessment of educational deficits and needs;
K2 – Uses objective sources of information;
K3 – Formulates conclusions from his/her own measurements or observations.

TEACHING FORMS AND METHODS:

Lecture(W1;W2;W3;W4;U1;U2;U3;K1;K2;):Problem lectures are given in the form of multimedia (PP) presentations.
Laboratory classes(W1;W2;W3;W4;U1;U2;U3;U4;K1;K2;K3;):

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

Lecture (Written exam) - Written examination (structured questions). Minimum of 60% of total points is required to pass the exam. -
Laboratory classes (Colloquium test) - -

BASIC LITERATURE:

1. Kędryna T., *General chemistry with biochemistry elements.*, Wyd. ZAMKOR, R. 2010
2. Murray R.K., Granner D.K., Mayes P.A., Rodwell V.W., *Harper's biochemistry. Illustrated.*, Wyd. PZWL, R. 2018

SUPPLEMENTARY LITERATURE:

1. Hughes J., Jefferson J.A., transl. Woźniak M., *Clinical chemistry.*, Wyd. Elsevier Urban % Partner, R. 2010

Detailed description of ECTS credits awarded - part B

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Chemistry

The number of ECTS credits awarded consists of:

1. Contact hours with the academic teacher:

- participation in: Lecture	9.0 h
- participation in: Laboratory classes	26.0 h
- consultation	4.0
	Total: 39.0 h.

2. Independent work of a student:

Preparation for the tests	25.00 h
Preparation for the laboratory classes	11.00 h

Total: 36.0 h

contact hours + independent work of a student Total: 75.0 h

1 ECTS credit = 25-30 h of an average student’s work, number of ECTS credit = 75.0 h : 25.0 h/ECTS = 3.00 ECTS on average: 3.0 ECTS

- including the number of ECTS credits for contact hours with the direct participation of an academic teacher: 0,00 ECTS points,

- including the number of ECTS credits for hours of independent work of a student: