



TOTAL per year: 45												
	10				35							41,5

- Educational objectives (max. 6 items)
- C1.** The transfer of knowledge in the field of structure, properties, and functions of the basic chemical components of tissues and biological fluids of humans.
- C2.** Get to know the basics of chemical homeostasis mechanisms and chemical composition of biological fluids, as a background for further biochemistry and physiopathology teaching.
- C3.** Teaching chemical calculations and interpretation of the results obtained from experiments performed.
- C4.** Development of appropriate ethical and proper communication skills.

Education result matrix for module/course in relation to verification methods of the intended education result and the type of class

Number of course education result	Number of major education result	Student who completes the module/course knows/is able to	Methods of verification of intended education results (forming and summarizing)	Form of didactic class <i>**enter the abbreviation</i>
			Presentation, oral response	LC
W 01	B.W1.	The student: 1. Describes water and electrolyte equilibrium		
W 02	B.W2.	2. Knows and understands the definition of: pH, solubility, isoionic, isohydric equilibrium. Describes types, composition, and properties of buffers as elements of homeostasis	Partial test 1: written calculations, open ended questions, test questions	LC
W 03	B.W3.	3. Knows and understands the definition of: solubility, colloidal solutions, osmosis and Gibbs-Donnan equilibrium.	Test 4: written calculations, open ended questions, test questions	LC
W 04	B.W4.	4. Knows the basic reactions of inorganic and organic compounds in aqueous solutions.		L, LC
W 05	B.W10	5. Knows the basic structure of simple organic compounds, components of cells, extracellular matrix, and body fluid macromolecules.	Presentation, oral response	L, LC
W 07	B.W11.	6. Describes the structure and biological roles of lipids and polysaccharides.	Test 2: written tests and open-ended questions	L, LC
W 08	B.W12.	7. Describes the structure and biological role of amino acids and peptides.	Test 3: and open-ended questions	LC
W 09	B.W12.	8. Describes the I, II, III and IV- levels of protein structures. Knows the mechanism of gastric acid production	Test 4: written tests	L, LC
W 10	B.W12.	9. Knows posttranslational modification of amino acids in proteins. Describes the structure of biogenic amines	Test 4: written tests	LC
W 11	B.W17	10. Understands reactive oxygen species formation, lipid, protein, and DNA peroxidation. Knows the role of antioxidants	Oral response	LC
W 12	B.W18	11. Knows: the enzymes involved in digestion, the mechanism of production of hydrochloric acid in the stomach, the composition and role of bile acids and its salts.	Oral response	LC
W 13	B.W20.	12. Knows the role of macro- and micro-minerals in the human body	Oral response	LC



U 01	B.U34.	Calculates percent and molar concentrations of compounds, knows simple and serial dilutions.	Test 1: written calculations Report in the protocol	LC
U 2	B. U5.	Determines the pH of the solution, calculate the buffer capacity.	Test 1: written calculations and open-ended questions Report in the protocol	LC
U 3	B.U7.	Describes the changes in the functioning of the organism in a situation disruption of homeostasis. Describes the buffers as elements of homeostasis, acid-base balance, acidosis and alkalosis.	Test 1: written calculations and open-ended questions Report in the protocol	LC
U 4	B. U9.	Uses basic laboratory methods such as qualitative analysis, titration, colorimetric spectrophotometry, pH-metry, chromatography, electrophoresis	Test 1,2,4: written tests and open-ended questions	LC
U 5	B.U10.	Is able to use simple measuring instruments to obtain the accuracy of measurements.	Assessment of the correctness of the analysis and interpretation of results allows to measure the ability to use theoretical skills in practice	LC
U 6	B.U14.	Knows how to plan and complete a simple scientific study and interpret the results, and draw conclusion	Assessment of analysis and interpretation of the results allows them to measure the ability to use theoretical knowledge in practice	LC
K 01	not applicable	not applicable	not applicable	not applicable

** L - lecture; SE - seminar; AC – auditorium classes; MC – major classes (non-clinical); CC – clinical classes; LC – laboratory classes; SCM – specialist classes (magister studies); CSC – classes in simulated conditions; FLC – foreign language course; PCP practical classes with patient; PE – physical education (obligatory); VP – vocational practice; SS – self-study, EL – E-learning .

Please mark on scale 1-5 how the above effects place your classes in the following categories: communication of knowledge, skills or forming attitudes:

Knowledge: 5

Skills: 5

Social competences: not applicable

Student's amount of work (balance of ECTS points)

Student's workload (class participation, activity, preparation, etc.)	Student Workload (h)
	45
1. Contact hours:	45
2. Student's own work (self-study):	41,5
Total student's workload	86,5
ECTS points for module/course	5,0
Comments	

Content of classes (please enter topic words of specific classes divided into their didactic form and remember how it is translated to intended educational effects)

Lectures

Lectures are mandatory (5x2 h=10)

Winter semester

- Some important monosaccharides and their derivatives. Structures of some heterooligosaccharides of blood group ABO and Lewis antigens, body fluid components as well as of membrane glycoproteins. Homopolysaccharides: some glucans and galactans.
- Glycosaminoglycans of animal and plant tissues : heparin, hialuronic acid, heparan sulphate, chondroitin, , dermatan sulphate. Some heteroglycans of plant tissues: pectins and heparinoids. Some glucuronides of plant tissues with pharmacologic activities. Examples of glucosides of animal tissues and their biological significance.



Additional literature and other materials (no more than 3 items)

1. Introduction to organic chemistry; WH. Brown; Harcourt Brace and Company, Inc., 2000 USA.
2. Organic Chemistry; G Solomons, C Fryhle; ed JOHN WILEY & SONS., Inc., 2000 USA

Didactic resources requirements (e.g. laboratory, multimedia projector, other...)

1. Chemical laboratory equipment
2. Overhead projector

Preliminary conditions (minimum requirements to be met by the student before starting the module/course)

Knowledge of high school chemistry

Conditions to receive credit for the course (specify the form and conditions of receiving credit for classes included in the module/course, admission terms to final theoretical or practical examination, its form and requirements to be met by the student to pass it and criteria for specific grades)

Positive evaluation of laboratory skills and protocol notes in the laboratory book (**obtaining a minimum of 60% of points from each test**). **In addition, a student may receive 3 to 5 points for presentation.**

The exam includes simply chemical calculations and theoretical knowledge about the structures and properties of sugars, fats, amino acids and proteins given during the laboratory classes and lectures. The exam is written and takes the form: multiple choice, open-ended questions, and some important structures of sugars, lipids, and amino acids.

The exam is considered to be passed on satisfactory grade after obtaining a minimum of 60% of the total pool of exam points (100%) . The evaluation points will be given at each exam task. In the case of test part one plus (+1) point for correct answer or 1 minus (-1) for incorrect answer will be given. The points obtained on final test of laboratory classes will be added to exam points to those students exclusively who had minimum 60% correct done points at the exam.

Because of written requests of students it can be organise pre-term of exam.

Grade:	Criteria (only for courses/modules ending with an examination)
Very Good (5.0)	92-100%
Good Plus (4.5)	84-91%
Good (4.0)	76-83%
Satisfactory Plus (3.5)	68-75%
Satisfactory (3.0)	60-67%

Name and address of module/course teaching unit, contact: telephone and e-mail address

Department of Chemistry and Immunochemistry, Wrocław Medical University, ul. Bujwida 44a;
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e-mail: maria.katnik-prastowska@umed.wroc.pl

Coordinator / Person responsible for module/course, contact: telephone and e-mail address



Dr hab. Mirosława Ferens-Sieczkowska, prof. nadzw.

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List of persons conducting specific classes: full name, degree/scientific or professional title, discipline, performed profession, form of classes.

Dr hab. Mirosława Ferens-Sieczkowska, prof. nadzw., Lecturer

Dr hab. Ewa Kratz, Lab. Classes
Dr hab. Magdalena Orczyk-Pawłowicz, Lab. Classes,
Dr Anna Lemańska-Perek, Lab. Classes,
Dr Małgorzata Pupek, Lab. Classes,
Dr. Beata Olejnik, Lab. Classes,
Mgr. Anna Kałuża, Lab. Classes,
Mgr. inż. Sebastian Balicki, Lab. Classes,

Date of Syllabus development

26.06.2017

Syllabus developed by

Dr Anna Lemańska-Perek

Signature of Head of teaching unit

Anna Lemańska-Perek

Signature of Faculty Dean

Prof. Andrzej Hendrich
Prof. Andrzej Hendrich, PhD

Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu Dziekanat Wydziału Lekarskiego ENGLISH DIVISION	
Wpłynęło dnia	27-06-2017
L.dz. DL/ED/	
Znak sprawy DL/ED-	

