Biological and General Chemistry Department

THEMATIC PLAN OF LECTURES FROM

THE MEDICAL AND BIOORGANIC CHEMISTRY
For I-st Year Foreign Students of the Dental Faculty
2016-2017 year

№	***Theme of lectures***	***Hours***
1	Formation of complexes in biological systems.	2
2	Protolitical equilibriums in chemical and biological systems.	2
3	Chemstry and stomatology. Theoretical principles of bioenergetics.	2
4	Electrode processes and their biological role in stomatology.	2
5	Physicochemical properties of surface phenomenon.	2
6	Basis of the structure and reactivity of biologically active compounds.	2
7	Reactivity of hydrocarbons and their derivatives.	2
8	Carbonyl compounds. Lipids.	2
9	Amino acids, peptides, proteins: structure, chemical properties, biological role.	2
10	Carbohydrates: structure, chemical properties, biological role.	2

Biological and General Chemistry Department

THEMATIC PLAN OF PRACTICAL LESSONS FROM

THE MEDICAL AND BIOORGANIC CHEMISTRY
For I-st Year Foreign Students of the Dental Faculty
2016-2017 year

№	*Theme of the practical lessons*	*Hours*
	Content module 1	
1	Introduction. Safety in chemical laboratory. Biogenic s - elements: chemical properties, biological role, uses in medicine.	2
2	Biogenic p - elements: chemical properties, biological role, uses in medicine.	2
3	Biogenic d - elements: chemical properties, biological role, uses in medicine.	2
4	Formation of complexes in biological systems.	2
5	Methods of expressing of solution.	2
6	Acid-base equilibrium in the organism. pH scale of biological liquids.	2
7	Volumetric analysis. Method of acid-base titrations. Alkalimetry. Acidemetry.	2
8	Buffer systems: classification, mechanism of the action.	2
9	Buffer capacity. The Role of Buffers in Biological Systems	2
10	Colligative properties of solutions. Osmosis.	2
11	Thermal effects of the chemical direction of the processes.	2
12	Potenciometric method of analysis.	2
13	Determination of oxidation-reduction (redox) potential.	2
14	Adsorption and ion exchange processes in biological systems. Chromatography.	2
15	Preparation, purification and properties of colloidal solutions.	2
16	Coagulation of colloidal solutions.	2
17	Physicochemical properties of biopolymers solutions.	2
18	Practical skills examination. Differentiated-credit of Medical Chemistry	2
	Biological and bioorganic chemistry. Module 1	
	Content module 1	
19	Classification of organic compound. Nomenclature.	2
20	Electronic structure of chemical bond in organic compounds. Enantiomerism and conformation isomerism.	2
21	Electronic structure of chemical connections in organic compounds. Conjugation and aromaticity.	2
22	Electronic effects in biologically active compounds.	2
23	Acidity and basicity of biologically active compounds.	2
24	Reactivity of alkanes and halogenalkanes.	2
25	Reactivity of alkenes.	2

26	Reactivity of arenes.	2
27	Nucleophilic addition in oxocompound.	2
28	Nucleofilic substitution in carboxylic acids and their biological active derivatives.	2
29	Lipids.	2
30	Heterofunctional biologically active compounds.	2
	Content module 2	
31	Amino acids: structural units of peptides and proteins.	2
32	Peptides and proteins.	2
	Content module 3	
33	Monosaccharides, as structure of carbonhydratess.	2
34	Oligo- and Polysaccharides.	2
	Content module 4	
35	Biologically active heterocyclic compounds.	2
36	Nucleic acids.	2
37	Practical skills and decision of situational tasks	2
38	Final module	2