

AMENDMENTS TO THE CURRICULUM IN THE ACADEMIC DISCIPLINE

«General and Inorganic Chemistry»
for the specialty 7-07-0912-01 «Pharmacy»
for the 2024/2025 academic year

Amendments	Basis
1. Changes have been made to the explanatory note according to the Appendix № 1	Educational plan of the institution for the 2024-2025 academic year
2. Changes have been made to the thematic plan according to the Appendix № 2	Educational plan of the institution for the 2024-2025 academic year
3. Changes have been made to the educational map according to the Appendix № 3	Educational plan of the institution for the 2024-2025 academic year
4. The list of practical skills has been updated according to the Appendix № 4	The meeting of the Department of General Chemistry dated 22.05.2024

The curriculum was revised and approved by the Department of *General Chemistry* (protocol № 6 of 22.05.2024).

Head of the Department of General Chemistry

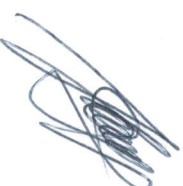
Khrustalev V.V.



APPROVED

by Dean of the Medical Faculty for International Students

Ishutin O.S.



Changes in the explanatory note

Total number of hours for the study of the discipline is 232 academic hours. Classroom hours according to the types of studies: lectures – 30 hours (including 9 hours of supervised student independent work), laboratory studies 108 hours, student independent work (self-study) – 94 hours.

DISTRIBUTION OF STUDY TIME BUDGET BY SEMESTER

Code, specialty name	semester	The number of hours for the study of the discipline						Intermediate assessment
		total	classroom	including			student independent work	
				lectures	supervised student independent work	laboratory studies		
7-07-0912-01 Pharmacy	1	112	66	9	3	54	46	credit
7-07-0912-01 Pharmacy	1	120	72	12	6	54	48	Exam

THEMATIC PLAN

Section (topic) name	Number of classroom hours	
	Lectures (incl. supervised student independent work)	Laboratory studies
1. Introduction into the discipline «General and Inorganic Chemistry»	—	6
2. Fundamental principles of chemical processes	9	36
2.1. Energetics, direction and depth of chemical reactions. Chemical equilibrium. Rate of chemical reactions	3	9
2.2. Doctrine on solutions	4.5	21
2.3. Reactions with electron transfer – redox reactions	1.5	6
3. Structure of matter	3	12
3.1. Electron layers of atoms and the periodic law of D.I.Mendeleev. The nature of chemical bonds and structure of chemical substances	1.5	9
3.2. Complex compounds	1.5	3
4. Chemistry of the elements	18	54
4.1. Introduction into chemistry of biogenic elements	1.5	3
4.2. General characteristic of s-elements. Elements of groups IA-IIA	1.5	6
4.3. General characteristics of d-elements. Elements of groups IIIB-VIB	1.5	3
4.4. Elements of VIIB group	0.25	3
4.5. Elements of VIIIB group	1.75	3
4.6. Elements of IB group	0.5	3
4.7. Elements of IIBgroup	0.5	6
4.8. General characteristics of p-elements. Elements of IIIA group	1.0	6
4.9. Elements of IVA group	2.0	6
4.10.Elements of VA group	3.0	6
4.11.Elements of VIA group	3.0	6
4.12.Elements of VIIA-VIIIA groups	1.5	3
Total hours	30	108

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1	Introduction into the discipline «General and Inorganic Chemistry». Fundamentals of bioinorganic chemistry.	3				Oral discussion
2	Main classes of inorganic compounds. L.w. «Production and properties of oxides, hydroxides, acidic and basic salts»	3				Laboratory work, Control work
3	Energetics, direction and depth of chemical reactions. Chemical equilibrium. L.w. «Estimation of the heat effect of neutralization reaction»	3				Laboratory work, Control work
4	Energetics and rate of chemical reactions: basics of chemical kinetics. L.w. «The study of the dependence of the rate of chemical reaction on concentration of reactants»	3				Laboratory work, Control work
5	Structure of matter: electron layers of atoms.	3				Control work
6	Structure of matter: the nature of chemical bonds.	3				Control work
7	Structure of matter: theories of valence bonds and molecular orbitals.	3				Control work
8	Complex compounds. L.w. «Production of complex compounds and study of their properties»	3			Selection of reactants and chemical glassware for the conduction of reactions of complex compounds production. Ability to compose equations of reactions of complex compound formation, to name it, and to write the instability constant equation.	Laboratory work, Control work
9	Energetics and rate of chemical reactions: doctrine on the structure of matter and chemical equilibrium.	3				Colloquium*
10	Doctrine on solutions: the ways to express the content of a solution. L.w. «Acquisition of skills of the work with laboratory glassware»	3				Laboratory work, Control work
11	Doctrine on solutions: colligative properties of solutions. L.w. «Hemolysis of red blood cells in hypotonic solution»	3				Laboratory work, Control work

12	Doctrine on solutions: theories of strong and weak electrolytes. L.w. «Measurement of active acidity of biological fluids»		3					Laboratory work, Control work
13	Doctrine on solutions: hydrolysis of salts. L.w. «Hydrolysis of salts and the influence of different factors on the degree of hydrolysis»		3			Measurement of pH with a help of colorimetric method in a solution of a salt, to write protolytic reactions of salt hydrolysis (in molecular and ionic form).	Laboratory work	Laboratory work, Control work
14	Doctrine on solutions: methods of preparation of solutions. L.w. «Preparation of a solution from fixanal and from the hitch, preparation of hydrochloric acid of a needed concentration by the dilution method»		3			Preparation of a solution of a given volume with a specified concentration	Laboratory work	Laboratory work, Control work
15	Doctrine on solutions: basics of the titrimetric method of analysis. L.w. «Determination of the molar concentration of the equivalent of oxalic acid»		3					Laboratory work, Control work
16	Doctrine on solutions: heterogeneous equilibria. L.w. «Study on the conditions of precipitation and dissolving in heterogeneous systems»		3					Laboratory work, Control work
17	Reactions with electron transfer – redox reactions. L.w. «Study on the influence of different factors on redox reactions»		3					Laboratory work, Control work
18	Chemistry of acid-base and redox reactions in solutions.		3					Colloquium*
Semester 2								
Lectures								
	Introduction into chemistry of biogenic elements		1.5					
	General characteristic of s-elements. Elements of groups IA-IIA		1.5					
	General characteristic of d-elements. Elements from IIIB – VIB groups		1.5					

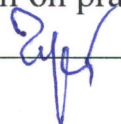
	Elements from VIIIB-VIIIB, IB-III groups						
	Elements from the platinum family	1.5					Report defence*
	Elements from IIIA and IVA groups	1.5		1.5			Report defence*
	Elements from the germanium family			1.5			Report defence*
	Elements of VA group	1.5					Report defence*
	Elements from the arsenic family			1.5			Report defence*
	Elements of VIA group	1.5					Report defence*
	Selenium and tellurium			1.5			Report defence*
	Elements of VIIA-VIIIA groups	1.5					Report defence*
	Laboratory studies						
1	Introduction into chemistry of biogenic elements. L.w. «Comparative analysis of water of different origin using several indices»		3				Laboratory work, Control work
2	Chemistry of s-elements: elements from IA group. L.w. «Investigation of chemical properties of compounds of elements from IA group»		3				Laboratory work, Control work
3	Chemistry of s-elements: elements from IIA group. L.w. «Investigation of chemical properties of compounds of elements from IIA group»		3				Laboratory work, Control work
4	Elements of groups IIIB-VIB. L.w. «Investigation of chemical properties of compounds of elements from IIIB – VIB groups»		3				Laboratory work, Control work
5	Elements of VIIB group. L.w. «Investigation of chemical properties of compounds of elements from VIIB group»		3				Laboratory work, Control work
6	Elements of VIIIB group. L.w. «Investigation of chemical properties of compounds of elements from VIIIB group»		3				Laboratory work, Control work
7	Elements of IB group. L.w. «Investigation of chemical properties of compounds of elements from IB group»		3				Laboratory work, Control work
8	Elements of IIB group. L.w. «Investigation of		3		Selection of reactants and	Laboratory	Laboratory work,

chemical properties of compounds of elements from IIB group»			laboratory glassware for the conduction of redox reactions. Ability to compose redox reactions and to balance them with a help of electron-ion method.	work	Control work
9	General characteristic of s- and d-elements.	3			
10	Elements from IIIA group. L.w. «Investigation of chemical properties of compounds of elements from IIIA group»	3			Colloquium* Laboratory work, Control work
11	Elements from IVA group: compounds of carbon. L.w. «Investigation of chemical properties of carbon containing compounds»	3			Laboratory work, Control work
12	Elements from IVA group: compounds of silicon and elements from the family of germanium. L.w. «Investigation of chemical properties of compounds of silicon, tin, and lead»	3			Laboratory work, Control work
13	Elements of VA group: compounds of nitrogen and phosphorus. L.w. «Investigation of chemical properties of compounds of nitrogen and phosphorus»	3			Laboratory work, Control work
14	Elements of VA group: compounds of elements from arsenic family. L.w. «Investigation of chemical properties of compounds of arsenic»	3			Laboratory work, Control work
15	Elements of VIA group: compounds of oxygen. L.w. «Investigation of chemical properties of compounds of oxygen»	3			Laboratory work, Control work
16	Elements of VIA group: compounds of sulfur and selenium. L.w. «Investigation of chemical properties of compounds of sulfur and selenium»	3			Laboratory work, Control work
17	Elements of groups VIIA-VIIIA. L.w. «Investigation of chemical properties of compounds from VIIA group»	3			Laboratory work, Control work
18	General characteristic of p-elements.	3			Colloquium*

* a mandatory form of current assessment (the control form for which each student receives a mark)

APPROVED

by Head of the working group in the
direction of «*Pharmacy*» of the Expert
council on practice-oriented training


Gurina N.S.

**LIST OF PRACTICAL SKILLS IN THE ACADEMIC DISCIPLINE «GENERAL AND
INORGANIC CHEMISTRY» FOR THE SPECIALTY 7-07-0912-01
PHARMACY**

Practical skill name	Form of control
1. Preparation of a solution of a given volume with a specified concentration.	Laboratory work
2. Measurement of pH with a help of colorimetric method in a solution of a salt, to write protolytic reactions of salt hydrolysis (in molecular and ionic form).	Laboratory work
3. Selection of reactants and chemical glassware for the conduction of reactions of complex compounds production. Ability to compose equations of reactions of complex compound formation, to name it, and to write the instability constant equation.	Laboratory work
4. Selection of reactants and laboratory glassware for the conduction of redox reactions. Ability to compose redox reactions and to balance them with a help of electron-ion method.	Laboratory work