

Документ подписан простой электронной подписью  
Информация о владельце:  
ФИО: Ястребов Олег Александрович  
Должность: Ректор  
Дата подписания: 28.05.2026 13:00:44  
Уникальный программный ключ:  
ca953a0120d891083f939673078ef1a989dae18a

**Federal State Autonomous Educational Institution of Higher Education  
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA  
NAMED AFTER PATRICE LUMUMBA  
RUDN University  
Institute of Medicine**

---

educational division (faculty/institute/academy) as higher education programme developer

**COURSE SYLLABUS**

---

**Chemistry**

course title

---

**Recommended by the Didactic Council for the Education Field of:**

**31.05.01 General Medicine**

---

field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of higher education:**

---

**General Medicine**

higher education programme profile/specialisation title

### 1. COURSE GOAL(s)

The goal of the course "Chemistry" is the formation of systematic knowledge about the structure of matter, the laws of chemical reactions, the main classes of inorganic compounds and their chemical properties, the basics of analytical chemistry, necessary for using this knowledge as a basis for studying subsequent special courses in both chemical and special areas.

### 2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course "Chemistry" is aimed at the formation of the following competencies (parts of competencies) among students: GC-1, PC-3, PC-4, PC-5.

*Table 2.1. List of competences that students acquire through the course study*

Competence code	Competence descriptor	Competence formation indicators (within this course)
GC-1	He is able to carry out a critical analysis of problematic situations based on a systematic approach, to develop a strategy of action	GC-1.1 Analyzes a problematic situation as a system, identifying its components and the connections between them
PC-3	Capable of counteracting and combating the use of doping in sports	PC-3.2 Able to analyze biochemical, physicochemical and molecular biological mechanisms of development of pathological processes in the cells of the tissues of the athlete's body, when taking prohibited drugs, determining the principles of the course of biochemical processes when taking prohibited drugs;
PC-4	Capable of using medical devices provided for by the procedure for providing medical care, as well as conducting patient examinations to establish a diagnosis	PC -4.2 Able to assess the effectiveness and safety of medical devices;
PC-5	Capable of assessing morphofunctional, physiological states and pathological processes in the human body to solve professional problems	PC- 5.2 Able to evaluate the results of clinical laboratory and functional diagnostics when solving professional problems, including using artificial intelligence technologies;

### 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective\* component of B block of the higher educational programme curriculum.

\* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

*Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules*</b>	<b>Subsequent courses/modules*</b>
GC -1	He is able to carry out a critical analysis of problematic situations based on a systematic approach, to develop a strategy of action		Hygiene; Public health and healthcare, healthcare economics; Epidemiology; Propaedeutics of internal diseases; Medical informatics; Evidence-based medicine; Bioorganic chemistry; History of medicine; Clinical pharmacology; Socially significant projects in medicine;
PC-3	Capable of counteracting and combating the use of doping in sports		Medical rehabilitation; Bioorganic chemistry; Pharmacology; Clinical pharmacology; Physical education; Applied physical education;
PC-4	Capable of using medical devices provided for by the procedure for providing medical care, as well as conducting patient		General surgery; Neurology, medical genetics, neurosurgery; Endocrinology; Anesthesiology, resuscitation, intensive care;

	examinations to establish a diagnosis		<p>Radiation diagnostics;  Traumatology, orthopedics;  General medical skills;  Emergency conditions;  Biotechnology;  Topographic anatomy and operative surgery;  Hospital surgery, pediatric surgery;  Oncology, radiation therapy;  Experimental oncology;  Bioorganic chemistry;  Pharmacology;  Practice in emergency medical manipulations (simulation center);  Practice in diagnostic profile: assistant ward nurse;  Practice to obtain primary professional skills and experience of professional activity: assistant procedural nurse;  Practice to obtain primary professional skills and abilities: assistant junior medical staff;</p>
PC-5	Capable of assessing morphofunctional, physiological states and pathological processes in the human body to solve professional problems		<p>Biochemistry;  Normal Physiology;  General Surgery;  Obstetrics and Gynecology;  Biology;</p>

			<p>Microbiology,  Virology;  Oncology,  Radiation  Therapy;  Pathophysiology,  Clinical  Pathophysiology;  Molecular  Genetic Methods;  Microbiological  Diagnostic  Methods;  Propaedeutics of  Internal Diseases;  Immunology;  Pathological  Anatomy,  Clinical  Pathological  Anatomy;  Radiation  Diagnostics;  Medical  Elementology;  Phthiology;  Anesthesiology,  Resuscitation,  Intensive Care;  Ophthalmology;  Methods of Cell  Biology and  Histology;  Pharmacology;  Bioorganic  Chemistry;  Anatomy;  Histology,  Embryology,  Cytology;  Topographic  Anatomy and  Operative  Surgery;  Forensic  medicine;  Maxillofacial  surgery;  Medical  forensics;  Otolaryngology;  Pediatrics;</p>
--	--	--	---

			Sectional course;
--	--	--	-------------------

\* To be filled in according to the competence matrix of the higher education programme.

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Chemistry" is 3 credits (108 academic hours).

Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)\*

Type of academic activities		Total academic hours	Semesters/training modules
			1
<i>Contact academic hours</i>			-
including:			
Lectures (LC)			-
Lab work (LW)		68	68
Seminars (workshops/tutorials) (S)			-
<i>Self-studies</i>		22	22
<i>Evaluation and assessment (exam/passing/failing grade)</i>		18	18
<b>Course workload</b>	academic hours	108	108
	credits	3	3

\* To be filled in regarding the higher education programme correspondence training mode

#### 5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1 Thermochemistry. Chemical Equilibrium	Topic 2.1. Thermochemistry	LW
	Topic 2.2. Chemical Equilibrium	LW
Module 2 Solutions. Electrolytic dissociation	Topic 2.1 Solutions.	LW
	Topic 2.2 Electrolytic dissociation	LW
Module 3 Dissociation of weak and strong electrolytes. Hydrolysis of salts.	Topic 3.1 Dissociation of strong electrolytes.	LW
	Topic 3.2 Dissociation of weak electrolytes.	LW
	Topic 3.3 Hydrolysis of salts	LW
Module 4 Heterogeneous equilibria.	Topic 4.1 Heterogeneous equilibria.	LW
Module 5 Coordination compounds	Topic 5.1 Coordination compounds	LW
Module 6 Oxidation- reduction reactions	Topic 5.1 Oxidation-reduction reactions	LW
Module 7 Main classes of inorganic compounds	Topic 6.1 Main classes of inorganic compounds	LW

Course module title	Course module contents (topics)	Academic activities types
Module 8 Fundamentals of Qualitative and Quantitative Analysis	Topic 6.1 Quantitative Analysis Topic 6.2 Qualitative Analysis	LW LW

\* - to be completed only for FULL-time studies: LC – lectures; LW – laboratory work; S - practical/seminar classes

## 6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

*Table 6.1. Classroom equipment and technology support requirements*

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lab-work	An auditorium for conducting laboratory work, individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and equipment.	Educational chemical laboratories equipped with laboratory tables, chemical glassware, instruments and reagents, multimedia systems.
Self-studies	An auditorium for students to work independently (it can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to EIOS.	

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY:

### *Main readings:*

1. E.Yu. Nevskaya, A.G. Tskhovrebov "General and Inorganic Chemistry" Moscow Peoples' Friendship University of Russia named after Patrice Lumumba, 2026
2. E.Yu. Nevskaya, A.F. Stepnova @Chemistry. General, Inorganic, Analytical Moscow Peoples' Friendship University of Russia named after Patrice Lumumba, 2026

### *Additional readings:*

1. **Geoffrey A. Lawrance. Introduction to Coordination. A Wiley Series of Advanced Textbooks.- NSW, Australia, 2010 -304 p.**
2. **David R. Klein. Organic Chemistry. 1st Edition. Wiley, 2011 – 1392 p.**
3. **Kovalchukova O.V., Avramenko O.V., Vu Thi Nkog An The theoretical foundations of the course "Chemistry". M.: Publishing house of RUDN, 2018.**
4. **Nivaldo Tro. Chemistry: A Molecular Approach. 5th Edition. – Pearson, 2019 – 1320 p.**

### *Internet sources*

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:
  - RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
  - EL "University Library Online" <http://www.biblioclub.ru>
  - EL "Yurayt" <http://www.biblio-online.ru>

- EL "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EL "Lan" <http://e.lanbook.com/>
- EL "Trinity Bridge"
- 2. Databases and search engines:
  - electronic foundation of legal and normative-technical documentation <http://docs.cntd.ru/>
  - Yandex search engine [https:// www .yandex.ru/](https://www.yandex.ru/)
  - Google search engine <https://www.google.ru/>
  - Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

***Training toolkit for self- studies to master the course \*:***

1. The set of lectures on the course
  2. The laboratory workshop on the course
- \* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

**DEVELOPERS:**

Associate Professor, Department of  
of general and inorganic chemistry

E.Yu. Nevskaya

---

position, department name

---

signature

---

initials, last name

**HEAD OF THE DEPARTMENT:**

of general and inorganic chemistry

V.N. Khrustalev

---

position, department name

---

signature

---

initials, last name

**HEAD OF THE PROGRAMME:**

Deputy Director of Institute of  
Medicine

N.V. Sturov

---

position, department name

---

signature

---

initials, last name