Name of the Discipline	Chemistry
Semester(s)	4
Responsible teacher	Rashidova Kamila Khamidovna, PhD , Associate professor
Language of teaching/learning	Uzbek
Connection to the curriculum	Optional
Academic workload (including contact hours and self-study)	Total workload: 120 h Contact hours – Lecture 20 h Practical 20 hours Laboratory 20 h IWS 60 hours
ECTS	4
Prerequisites	Not necessary
Discipline objectives / Learning Outcomes	The purpose of the discipline is to develop a scientific worldview in students, to learn to predict the structure and properties of substances, their ability to interact with other substances. Understand the driving forces of chemical reactions, the features of their occurrence and ways to control them. **Learning outcomes** - basics of general chemistry for understanding the phenomena being studied; - general provisions, laws and chemical theories, the essence of the doctrine of periodicity and its role in predicting the properties of chemical elements and their compounds; - quantum mechanical structure of atoms, molecules and chemical bonds. - current state and prospects for the development of chemistry, its place in natural science; - fundamentals of chemical thermodynamics, chemical kinetics, atomic-molecular theory, quantum mechanical concept of atomic structure and chemical bonding; - Periodic law Dmitri Mendeleev and its significance; - basic characteristics of disperse systems, basic properties of solutions of non-electrolytes and electrolytes; the most important theories and laws that describe the properties of electrolyte solutions, as well as the processes occurring in them; - patterns of redox and electrochemical reactions processes; basic concepts of the Chemistry of complex (coordination) compounds; basic - compose equations of Chemical reactions; - carry out calculations using Chemical formulas and equations, as well as calculations necessary for preparing solutions of given concentrations; - use quantitative calculations to establish formulas of Chemical compounds; - explain the dependence of the properties of chemical elements and substances formed by them on their position in the periodic table Dmitri Mendeleev, as well as the dependence of the properties of inorganic substances on their composition and structure; the nature and methods of formation of a chemical bond; -methods for preparing solutions of a given concentration; methods for performing various laboratory operations: dissolution, evaporation, heating, etc.
Lessons' contents	Content 1. Goals and objectives of branches of science, subject of general chemistry, history of development.

	2. Basic concepts and laws of Chemistry. Atomic-molecular science. 3. Law of constancy of composition. Law of equivalents. 4. Atomic and molecular mass, Avogadro's number, mol, molar mass. 5. Ideal gas laws. 6. Periodic law of chemical elements and Mendeleev's periodic system of elements. 7. Periodic and non-periodic properties of Chemical elements. The structure of the Atom. Modern doctrine of the structure of the atom. 8. Properties of covalent bonds. Ridization of electron orbitals. Types of hybridization. Ionic, Intermolecular and Hydrogen bonds, as well as their specificity. 9. Rate of chemical reaction. 10. Chemical equilibrium and conditions for its displacement. Le Chatelier's principle. 11. Energy of Chemical processes. 12. Water, water in nature, anomalous properties of water. 13. General characteristics of disperse systems and their division into classes. 14. Concentrations of solutions and methods of their expression. 15. Theory of electrolytic dissociation. 16. Ion exchange reactions in electrolyte solutions. Hydrolysis of salts. 17. Redox process. 18. Electrolysis. Electrolysis of liquids and solutions. Laws of electrolysis. 19. Review of coordination compounds. Isomerism of coordination compounds. 20. The most important classes of inorganic compounds 21. General properties of metals and methods of their production 22. General properties of halogens and methods for their preparation 23. General properties of chalcogens and methods for their preparation 24. General properties of pnictogens and methods for their preparatio
The exam format	written
Teaching/learning and examination requirements	Complete mastery of theoretical and methodological concepts in the discipline, the ability to correctly reflect the results of analysis, independently reason about the processes being studied and carry out tasks in the current, intermediate forms of control, pass written or oral work on the final control. When drawing up Final Exam questions, deviations from the content of the discipline program are not allowed. The bank of Final Exam questions for each discipline is discussed at the meeting and approved by the head of the department. When compiling final exam tickets, the final exam question bank is used; the number (3-5 questions) of questions in the ticket should be in a 50/50 ratio, depending on the content of classroom and independent learning. No later than 1 week before the start of the final control, tickets signed by the head of the department, enclosed in an envelope, are sealed by the Dean's office and opened 5 minutes before the start of the exam in the presence of students. Final exam duration is 80 minutes. Answers to final exam questions are recorded in copybooks with the seal of the Dean's office. After completion of the final exam work, the work is immediately encrypted by a representative of the Dean's office, and the copybooks are handed over to the commission for verification. From the moment of completion of the final exam, a period of 72 hours is allotted for checking and posting the results on the electronic platform. The teacher who taught the students in this discipline is not involved in the process of conducting the exam and checking the students' answers. Student(s) who are dissatisfied with the final exam results may submit a written

	or oral appeal within 24 hours of the publication of the final exam results. Complaints submitted after 24 hours from the publication of the Final Exam results will not be accepted.
Bibliography	1.Бозоров Н.И. Общая химия. Учебник. Т:2017. 40.4М90. 2.Бердикулов Р.Ш., Миркомилов Ш.М., Искандаров О.Ю. Неорганическая химия. Учебник. Т:2018. 3.Ахмеров К., Джалилов А., Сайфутдинов Р. Общая и неорганическая химия. Учебник. Т:2017. 40.4уа. 4.Раймонд Чанг. Общая химия: The Essential Concepts, 5-е издание, McGraw-hill Education; Англия 2013. 5.Ганкин В.Ю., Ганкин Ю.В. Общая химия. Институт теоретической химии, Бостон, США, 2012. 6.Ташполатов Ю.Т., Рахматуллаев Н.Г., Искандаров А.Ю. Решение задач по неорганической химии. Ташкент-2003. 7.Парпиев Н.А., Муфтахов А.Г., Рахимов Х.Р. Неорганическая химия. Ташкент: Узбекистан. -2003. 8.В.Я.Ганкин и Ю.В.Ганкин. Общая химия. Институт теоретической химии, Бостон, США, 2012. 9.Собиров З. Органическая химия.Ташкент: Алокачи. 2005.
Scope of assessment criteria and procedure	**CURRENT CONTROL** **Purpose:** Determining and assessing the student's level of knowledge, practical skills, and competencies on course topics. **Instructions:** The student's activity in daily classes is assessed through the student's mastery of course topics, as well as constructively interpreting and analyzing the educational material, developing module-specific skills, acquiring practical skills (in terms of quality and the specified number) and competencies, solving problem situations aimed at applying professional practical skills, working in a team, preparing presentations, etc. **Current control form:** Activity in lessons Preparing educational materials Working with sources within the subject Using educational technologies Working in a team Preparing presentations Working with projects **INTERMEDIATE CONTROL** **Purpose:** Assessing the student's knowledge and practical skills and level of mastery of lecture material after completing the relevant section of the course. **Form and procedure of intermediate control:** Midterm examination is held during the semester during the training sessions after the completion of the relevant module of the curriculum of the subject. Midterm examination is held once in written form within the framework of this subject. Midterm examination questions cover all topics of the subject. **Independent learning:** **Purpose:** Independent learning is aimed at fully covering the content of this course, expanding the theoretical knowledge acquired, and establishing independent learning activities for students. **Form and procedure of independent education:** ndependent work assignments are completed in the form of an educational project, presentation, case study, problem solving, information search, digest, colloquium, essay, article, abstract, etc.

Completed assignments for independent study are placed in the electronic system and checked based on the anti-plagiarism program and evaluated by the subject teacher.

In this case, the uniqueness of the completed assignment should not be less than 60%, otherwise the assignment will not be accepted for assessment.

The number of independent work assignments, depending on the nature of the subject, should not be less than 3 for one subject (module).

Independent work assignments account for 60% of the points allocated for current and intermediate control.

Independent learning task 1: Preparation of project work based on independent learning topics

Independent learning task 2: Preparing sample video lessons based on specialized subject topics.

Independent learning task 3: Preparation of open lesson plans in specialized subjects using interactive methods.

Independent learning task 4: Analysis of educational normative documents for specialized subjects and preparation of presentations.

FINAL CONTROL

Purpose: The final examination is held at the end of the semester to determine the level of mastery of the student's theoretical knowledge and practical skills in the relevant subject. The final examination is held at a specified time according to the examination schedule created by the Registrar's Office on the electronic platform.

Requirements: The student must have passed the current control, intermediate control and independent learning assignments by the deadline for the final control type in the relevant subject.

A student who has not passed the current control, intermediate control and independent learning assignments, as well as who has received a score in the range of "0-29.9" for these assignments and control types, is not included in the final control type.

Also, a student who has missed 25 percent or more of the classroom hours allocated to a subject without a reason is excluded from this subject and is not included in the final control type and is considered not to have mastered the relevant credits in this subject.

A student who has not passed or was not included in the final control type and has received a score in the range of "0-29.9" for this type of control is considered to be an academic debtor.

Final control form: The final examination in this subject will be conducted in written form.

If the final examination is conducted in written form, the requirements for assessment must also be reflected.

Criteria for assessing student knowledge

5 stars	100 points		Evaluation criteria
5	90-100	Excel lent	When a student is considered to be able to make independent conclusions and decisions, think creatively, observe independently, apply the knowledge he has gained in practice, understand, know, express, and narrate the essence of the subject (subject), and have an idea about the subject (subject)

	4	70-89,9	Good	When the student is considered to be able to observe independently, apply the knowledge he has gained in practice, understand, know, express, and narrate the essence of the subject (subject), and has an idea about the subject (subject)
	3	60-69,9	Satisfactory	When the student is found to be able to apply the knowledge he has gained in practice, understands, knows, can express, and narrate the essence of the subject (subject), and has an idea about the subject (subject)
	2	0-59,9	Unsatisfactory	When it is determined that the student has not mastered the science program, does not understand the essence of the science (subject), and does not have an idea about the science (subject)

Course evaluation criteria and procedure

Control type	**Total points allocated**	**Control (task) form**	**Distribution of points**	**Qualifying score**
Current control	30 points	System tasks	20 points (divided by the number of tasks)	18 points
		Student activity (in seminars, practical, laboratory classes)	10 points	
Intermediate control	20 points	Supervision: Written work	10 points	12 points
		System tasks	10 points (divided by the number of tasks)	
Final inspection	50 points	Written assignment (5 questions)	50 points (10 points per question)	30 points

** **Note:** 60% of the points allocated for current and intermediate control are allocated to independent work assignments. Independent work assignments are evaluated as system assignments through the electronic platform.*