

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF
TAJKISTAN
TAJK NATIONAL UNIVERSITY

"Agreed."

Rector of the Tajik National University
_____ Khushvakhtzoda Q.Kh.
" ____ " _____ 2022 y.

"Approved."

Minister of Education and Science of the
Republic of Tajikistan
_____ Saidzoda R.H.
" ____ " _____ 2022 y.

EDUCATIONAL PROGRAM
BY AREA (SPECIALIZATION)

Specialty Group: 3105 - Chemical Sciences
Specialization: 1-310501-02-Chemistry (scientific and pedagogical activity)
Qualification: Chemist. Chemistry teacher
Academic Degree: Bachelor's Degree
Study period: 4 years

Dushanbe - 2022

CONTENTS

1	General provisions of the educational program.....	4
2	Documents regulating the content and process of implementation of the educational program.....	6
3	Minimum content and content of educational programs for the specialty 1-310501-02-Chemistry (scientific and pedagogical activity)	7
4	Term of mastering the educational program.....	15
5	Conditions of mastering the educational program.....	16
6	The content of the set of documents of the educational program for the specialty 1-310501-02-Chemistry (scientific-pedagogical activity).....	19
7	Graduation from the specialty.....	
8	Internal Procedure for Quality Assurance of the Educational Program.....	21
9	Rules of admission according to the educational program.....	22
10	Change Management	23
	Appendix: Summary of work programs of academic subjects.....	25

LIST OF ABBREVIATIONS

MES - Ministry of Education and Science of the Republic of Tatarstan
State Standard of Higher Vocational Education in the Republic of Tajikistan
Republic of Tajikistan

IHPE - Institution of Higher Professional Education

EP - Educational program

MC - Model Curriculum

WC - Working Curriculum

EMC - Educational and Methodological Council

CS-Curriculum for the subject

WPS - Work Program for the subject (syllabus)

FS - Fundamental subjects

GO - General subjects

SC - Subject of choice

GPD - General Professional Disciplines

SS - Special subjects

RDW - Research and Development Work

IWS - Independent work of students

IWSGT - Independent work of students under the guidance of the teacher

CC - Current control

FC - Final control

GPA (Grade Point Average) - Overall GPA

TNU-Tajik National University

NTC-National Test Center under the President of the Republic of Tajikistan

MTC - Methods of Teaching Chemistry

1. GENERAL PROVISIONS OF THE EDUCATIONAL PROGRAM

1.1 Information about the specialty

The name, code and group of specialty 31.05-Chemistry correspond to the State Classifier of directions and specialties in the Republic of Tajikistan, which is approved by the Resolution of the Government of the Republic of Tajikistan № 349 from June 30, 2007.

Bachelor's degree program in the specialty 1-310501-02-Chemistry (scientific and pedagogical activity), according to the certificate AS № 0000920 from 08.08.2019 by the State Control Service in the field of education (now Agency for Control in the Field of Education and Science under the President of the Republic of Tajikistan) is accredited.

The present educational program for specialty 1-310501-02-Chemistry (research and teaching) is revised August 30, 2022, and will be implemented from September 1, 2022-2023 academic year.

1.2 Graduate qualification

After mastering the educational program for the specialty 1-310501-02-Chemistry (scientific and pedagogical activity) in the form of full-time and distance learning, at the end of training the graduate is assigned the following professions and degree :

- professional qualification - Chemist. Chemistry teacher;
- Professional degree - Bachelor's degree in Chemistry

1.3 General description of the graduate qualification

A graduate with a Chemistry degree must:

- to teach professional and general chemical disciplines in general, secondary special and higher educational institutions;

A graduate with a Chemistry degree must:

- know the teaching of professional and general education disciplines in general education, specialized secondary and higher education institutions;
- be able to develop ways of different testing methods to assess the performance of students in general education institutions and students in special and higher education institutions;
- to be able to prepare methodological aids for experimental work in educational institutions of general, specialized secondary, higher education and central laboratories of industrial enterprises;
- be able to conduct experimental experiments according to given instructions, process and analyze the results;
- be able to draw up reports and articles based on the results of the analysis and submit them to scientific publications;
- be able to participate in seminars, conferences and symposiums, in the design and preparation of publications on the results of research work;
- be able to use the basic concepts, ideas and methods of natural science to solve basic problems;
- be able to work in institutions of general secondary, specialized secondary and higher education, research and production institutes, service sector, economic organizations and other organizations that require higher chemical education;
- be able to organize the protection of intellectual property and the results of research work as a trade secret of the company;

A graduate with a Chemistry degree should know:

- Constitution of the Republic of Tajikistan and other normative legal acts within the scope of their professional activities;
- Have skills in teaching professional and general education disciplines in general education, specialized secondary and higher education institutions;
- Have the skills to actively participate in the development of various testing methods to assess the performance of students in general education institutions and students in specialized secondary and higher education institutions;
- know the methods of process control of chemical production processes;

- be able to highlight useful scientific and technical information from the electronic library, abstract journals, and the Internet;
- be able to apply the results of research work in practice;
- can provide the ideas of humanism, equality and justice in his professional activities.

1.3.1 The object of the specialty

- general education institutions, lyceums, and colleges;
- universities, institutes, research institutes;
- industrial enterprises, chemical laboratories of institutions.

1.4 Graduate degree requirements

A graduate who has mastered the Bachelor's degree program, in accordance with the type of professional activity for which this educational program is aimed, must meet the educational results specified in paragraph 3 of this document.

1.5 Graduate's field of activity

The types of professional activity in which a graduate is prepared after graduation from the baccalaureate are as follows:

- Pedagogical activities in general education, specialized secondary and higher education institutions;
- research activities in the field of chemistry;
- scientific and production activities in production institutions and industrial enterprises;
- organizational and managerial activity in institutions of general secondary education, secondary specialized, higher and industrial institutions.

1.6. Types of professional activity of the bachelor in chemistry (scientific-pedagogical activity)

- general professional activity in institutions of general secondary, specialized secondary and higher education, organizations, institutions, enterprises and associations regardless of affiliation and form of ownership;
- educational, scientific, and research activities in the field of chemistry;
- processing and further development of professional educational programs;
- Use and know a variety of methods, techniques, and teaching tools, including solving chemical problems;
- expert activities in scientific projects in the field of chemistry;
- Ensuring the level of training of students in accordance with the requirements of the state educational standard;
- participation in the activities of methodical associations and other forms of methodical work;
- Ensuring the protection of the lives and health of students in the educational process;
- teaching the subject "Modeling in Chemistry" using computer programming.

This educational program is implemented on the direction and on the corresponding course of specialties 1-31 05 01-02-Chemistry (scientific and pedagogical activity). The specific type of professional activity, for which the bachelor is prepared, is determined by the National University of Tajikistan together with the authorized participants of the educational process.

1.7 Opportunity to continue training of the graduate

A graduate in chemistry who has mastered the educational program in the specialty 1-31 05 01-02-Chemistry (scientific-pedagogical activity) is ready to continue his studies in the master's degree program.

According to the State Standard of Higher Professional Education in the Republic of Tajikistan, persons with a Bachelor's degree can continue their studies at the second stage of higher professional education - Master's degree in the relevant course and direction (specialization).

2. DOCUMENTS REGULATING THE CONTENT AND PROCESS OF IMPLEMENTING THE EDUCATIONAL PROGRAM

2.1 The educational program is developed on the basis of the State standard of higher professional education in the Republic of Tajikistan and normative legal acts of the Republic of Tajikistan in the field of education, and further processing of its applications must meet the requirements of the following documents:

- Law of the Republic of Tajikistan "On Education" of 22.07.2013 № 1004 (as last amended) of 17.05.2018 № 1527);

- Law of the Republic of Tajikistan "On Adult Education" dated 24.02.2017, № 1394;

- Law of the Republic of Tajikistan "On Higher Vocational and Postgraduate Education", 19.05.2009, № 531;

- National Strategy for Education Development in the Republic of Tajikistan until 2030 from 29.09.2020, № 526;

- The National Concept of Education in the Republic of Tajikistan, approved by Government Resolution No. 94 of March 3, 2006;

- State standard of higher professional education of the Republic of Tajikistan from 25.02.2017 № 94;

- Accelerated Industrialization Program of the Republic of Tajikistan for 2020-2025, approved by Decree of the Government of the Republic of Tajikistan № 293 of May 27, 2020;

- On training specialists to meet the requirements of the labor market, which was adopted by Decree No. 253 of the Majlisi Namoyandagon of the Majlisi Oli of the Republic of Tajikistan, dated November 25, 2020;

- Targeted state program for the development of mathematics, exact and natural sciences for 2021-2025, approved by the Government of the Republic of Tajikistan on April 30, 2021 № 170;

- State classifier of directions and specialties in the Republic of Tajikistan from 30.06.2007 № 349;

- Regulation on the credit system in institutions of higher professional education of the Republic of Tajikistan from 30.12.2016 № 19/24;

- Regulation on the credit system in institutions of higher professional education of the Republic of Tajikistan from 30.12.2016 № 19/24;

- Methodological recommendations for the development and updating of educational programs of higher professional education in the Republic of Tajikistan.

- Strategy for the Study and Development of Mathematics, Exact and Natural Sciences in Education and Science until 2030.

- Strategic Development Plan of the National University of Tajikistan for 2021-2025

2.2 The state standard of higher professional education in the Republic of Tajikistan defines the requirements for the content and minimum mandatory content of the educational program, conditions and terms of implementation.

2.3 The Program of Higher Vocational Education includes the following documents: plan of study for specialties, work plan of study, curricula, syllabuses and syllabuses for subjects, explanation of training programs for compulsory subjects and elective subjects. Minimum requirements for the content of the above documents are reflected in the State Standard of Higher Professional Education in the Republic of Tajikistan.

2.4 A brief description of the educational programs of compulsory subjects and elective subjects is considered an integral part of the educational program, which is a brief description of the subject; type of activity; language of instruction; competencies to be developed by the student during mastering this subject; educational results obtained while studying the subject; list of chapters and subjects; includes educational and technical support of the subject and forms of current and final control. The minimum requirements for a brief description of educational programs The full content of the work programs of compulsory and optional subjects and subjects can be found in the electronic library of the National Technical University (see <https://tnu.tj>).

2.5 The educational program provides for the compulsory study of sections and modules specified in paragraph 3 of this document.

2.6 Sections and modules of the educational program consist of basic and university subjects, elective subjects, elective classes, practice and final certification.

2.7 The list of sections, modules and basic subjects of the educational program must comply with the requirements of the document "Classification of educational subjects by sections and modules, samples of educational programs by direction (specialty) and curriculum.

3. MINIMUM MANDATORY CONTENT AND CONTENT OF EDUCATIONAL PROGRAMS FOR SPECIALTIES

1	PROGRAM NAME	1-310501-02-Chemistry (scientific and pedagogical activity)
2	ACADEMIC DEGREE	Undergraduate
3	FORM OF LEARNING	Daytime and remote
4	CRITERION OF DURATION OF COURSE	4 years
5	NUMBER OF CREDITS	240 credits (60 credits per year)
6	GENERAL OBJECTIVE	The aim of this program is to train professional specialists with not only basic theoretical knowledge, but also practical skills of a chemist. Graduates of the specialty of this educational program can carry out not only teaching activities, but also research, scientific-production and organizational and managerial activities.
7	BRIEF DESCRIPTION OF THE EDUCATIONAL PROGRAM	This educational program consists of the following sections and modules: <u>Section 1: Basic subjects (48 credits)</u> Socio-humanities module - 22 credits; Language module - 15 credits; Module of natural-economic disciplines and information technology - 11 credits. <u>Section 2. Special subjects (105 credits)</u> Module general professional subjects - 51 credits; Module special subjects - 54 credits; <u>Section 3: Elective courses (60 credits)</u> Unit 1 Elective Module - 6 credits Unit 2 Elective Module - 54 credits <u>Section 4: Practice (18 credits).</u> <u>Section 5: Graduation (9 credits).</u> <u>Section 6. Elective courses (18 credits).</u>
8	LEARNING OUTCOMES OF THE EDUCATIONAL PROGRAM	After completing the educational program, the graduate should have the following general professional competencies: – interpersonal relationship skills; – willingness to work in a group; – regulatory and ethical knowledge and its use in professional activities; –A supporter of a healthy lifestyle, focused on the necessary level of physical fitness for conscious professional activity; – acceptance of difference and small culture; – the ability to be self-critical and critical; – the ability to use knowledge in practice; – research skills; –Ability to acquire new knowledge, ability to use modern information and communication technologies;

		<ul style="list-style-type: none"> - differentiated approach in the learning process, taking into account the differences between them and their individual needs; - the professional ethics of teaching; - express your opinion correctly in oral form; - The language skills are at a communicative level; - the ability to solve interdisciplinary problems and establish links between different disciplines; - the ability to find adequate and appropriate methods of professional development.
9	EDUCATIONAL ASSESSMENT	<p>In the educational process, the results of the educational program are evaluated as follows:</p> <ul style="list-style-type: none"> - pedagogical - Making calendar and detailed lesson plans, psychological characteristics of classmates and individuals students in the process of practice; - control "intake" - preparation of students in chemistry at the beginning of the 1st year (test papers, problems, etc.); - planned and regular assessment of the level of knowledge, skills and abilities of the future teacher of chemistry, which students acquire during the study of sections and modules; - Written work and presentations that give students the opportunity to assess their progress in oral and written communication; - individual and group projects;
<p>Note: credits of elective courses (18 credits) are not included in the total program credits and are not considered required. TNU has the ability to determine the list of activities and the amount of their credits.</p>		
		<ul style="list-style-type: none"> - homework, thematic tests, quizzes, exams, certification; - a comparative analysis of the level of students' training at "admission" and "graduation"; - comparative analysis of planned and achieved educational results. <p>research</p> <ul style="list-style-type: none"> - the ability to develop a plan of research work and to study published scientific literature on a scientific topic; -regular improvement of the level of mastery of knowledge, skills and abilities to perform research work; - analysis of experimental scientific papers with the theoretical part of the scientific literature; - ability to prepare reports, articles, article abstracts, monographs, knowledge of the regulatory framework for obtaining patents. <p>research and development</p> <ul style="list-style-type: none"> -knowledge of technology and mastery of technological processes of chemical production, production of chemical materials, their calculation; -the ability to draw up documents in terms of quality management and exemplary methods of quality control of technological processes at the production site, the organization of the workplace, its equipment, placement of technological equipment, implementation of control over compliance with technological discipline and environmental safety; - implementation of the results of research work in production. <ul style="list-style-type: none"> - organizational and managerial - planning and organizing the work of the team within the framework of professional activity;

		<ul style="list-style-type: none"> - know the organizational and legal basis of administrative and economic activity, planning of employee labor and payroll; -knowledge of methods of implementation of new ideas, organization of production and effective management of human labor, preparation of documents for creation of quality management system of production parts and whole products; -knowledge of methods of implementation of new ideas, organization of production and effective management of human labor, preparation of documents for creating a management system quality of production parts and entire products; - Ability to develop an operational plan for chemical production, to analyze the costs and results of production units, to draw up technical documentation, as well as standard reports on the approved form; -decisions, orders and decrees, regulatory materials and instructions relating to the sphere of chemical production; - main scientific and technical problems and prospects for the development of science, technology and chemical technology; - basics of economics, organization of labor and production; - The basics of labor law; - rules and regulations -- occupational health and safety. 		
10 QUALIFICATION				
SYMBOL AND NAME OF THE SPECIALTY		1-310501-02-Chemistry (scientific and pedagogical activity)		
SPECIALTY GROUP		3105 - Chemical Sciences		
QUALIFICATION AND PROFESSIONAL DEGREE AFTER TRAINING		Teacher, Bachelor of Education in Chemistry		
11 SECTIONS AND MODULES				
SECTION TITLE		BASIC SUBJECTS	48	credit
PURPOSE OF THE SECTION		The aim of the section is to provide basic knowledge and skills necessary for admission to the system of higher professional education of the Republic of Tajikistan.		
SECTION SUMMARY		The section of basic subjects consists of the following modules: Module of social-humanitarian subjects - 22 credits; Module of language subjects - 15 credits; Module of natural-economic disciplines and information technology - 11 credits.		
MODULE NAME		Module of social-humanitarian subjects	22	credit
PURPOSE OF THE MODULE		The purpose of the module is to study the basics of social sciences and humanities, the basics of history, culture and economy of the Republic of Tajikistan, as well as the formation of a cultural and communicative worldview.		
MODULE SUMMARY		1. Philosophy - 4 credits; 2. Modern History of Tajikistan - 3 credits; 3. Cultural Studies - 3 credits; 4. Sociology - 3 credits;		

	5. Political Science - 3 credits; 6. Jurisprudence in the specialty - 3 credits; 7. Scientific Religion - 3 credits.		
MODULE LEARNING OUTCOMES	A student who has mastered the module: - knows the basics of history and culture, the role and status of Tajikistan in the history of mankind and the modern world; - knows the basics of business planning, law and legislation of the Republic of Tajikistan; - has the basics of the humanities and social sciences, methods and ways of philosophical analysis of problems, forms and methods of scientific education; -can independently express his point of view, has logical thinking, is able to conduct formal interviews, spiritual and moral discussions, observes moral and aesthetic principles; -- can demonstrate knowledge of different ways of thinking and the ability to use them in different situations according to pedagogical and political requirements; - Master theories, strategies, and tools to help empower students and develop their creativity.		
MODULE NAME	Language module	15	credit
PURPOSE OF THE MODULE	The purpose of the module is to provide a professional base of language/communication skills necessary for the teacher's job.		
MODULE SUMMARY	1. the Tajik language by specialization - 3 credits; 2. Russian language by specialty - 6 credits; Foreign languages by specialty - 6 credits.		
MODULE LEARNING OUTCOMES	A student who has mastered the module: - can correctly use Tajik, Russian and foreign languages in oral and written speech at the level of communication within their specialty; - has practical knowledge and skills of searching for scientific information in a foreign language; - has knowledge and skills in the use of terms in a foreign language; - skills in developing the content and structure of speech in accordance with the purpose, situation, and participants in communication.		
MODULE NAME	Module of Natural-Economic Sciences and Information Technology	11	credit
PURPOSE OF THE MODULE	The aim of the module is to create a basis for the formation of competencies related to the natural and exact sciences, which contributes to the development of a creative, personality-oriented approach.		
MODULE SUMMARY	1. information technology - 5 credits; 2. Economic geography of Tajikistan with the basics of demography - 3 credits; 3. Ecology - 3 credits. 1. information technology - 5 credits; 2. Economic geography of Tajikistan with the basics of demography - 3 credits; 3. ecology - 3 credits.		
EDUCATIONAL RESULTS OF THE MODULE	A student who has mastered the module: - Will master the skills of using computer information systems, collecting, protecting, analyzing, publishing, and searching for information on the Internet;		

	<ul style="list-style-type: none"> - Can analyze the geopolitical situation, knows the administrative, social, and territorial division of the country; - knows the peculiarities of industry in Tajikistan, the history of industry and agriculture of the country; - Understands the principles of sustainability and productivity of wildlife and its changes under the influence of anthropogenic factors; -Has the ability to systematically analyze global environmental problems, environmental protection issues, and the rational use of natural resources based on knowledge of the basic laws of the environment. 		
SECTION TITLE	SPECIALTY SUBJECTS	105	credit
PURPOSE OF THE SECTION	The purpose of the department is to teach students the major subjects and requirements that are necessary for the future activities of a specialist in the field.		
SECTION SUMMARY	The Department of Major Subjects consists of the following modules: Module of general professional subjects - 51 credits; Module of special subjects - 54 credits.		
MODULE NAME	Module of general professional subjects	51	credit
PURPOSE OF THE MODULE	The purpose of this module is to provide students with a base of knowledge and skills in professional subjects that are necessary to carry out professional teaching and research activities.		
MODULE SUMMARY	<ol style="list-style-type: none"> 1. Higher mathematics - 6 credits; 2. Physics - 6 credits; 3. Pedagogy - 3 credits; 4. Fundamentals of Pedagogical Excellence - 3 credits; 5. Methods of teaching chemistry - 6 credits; 6. Inorganic Chemistry - 12 credits; 7. Organic Chemistry - 12 credits; 8. Economic Theory - 3 credits. 		
EDUCATIONAL RESULTS OF THE MODULE	<p>A student who has mastered the module:</p> <ul style="list-style-type: none"> - knows the basics of school and higher mathematics, can use mathematical knowledge in solving problems in chemistry; - is able to solve chemical problems using mathematical methods; - understands the physical essence of natural phenomena occurring in the world and understands the role of chemistry in shaping the worldview and implementing practical tasks; - uses advances in modern chemistry to enhance the development of thinking in his chosen profession; - can relate his mathematical and physical knowledge to his chemical knowledge and understands the essence of the connection of all three subjects; - is able to plan educational and training activities at the level of general educational institutions; - knows the laws and characteristics of student development, can group their differences and special requirements (e.g., learning style, giftedness, etc.) - has the principles of education and pedagogical experience in the field of education of the Republic of Tajikistan; 		

	<ul style="list-style-type: none"> - has the opportunity to give advice to students and cooperates with parents on educational activities; - has the basic skills of observation, description and analysis of activities; - is familiar with the teacher's code of ethics, recognizes the teacher's role as a valuable coach, and is committed to developing school values; - has the pedagogical methods of communication and can use them in communicative situations in terms of teacher status; - master the methods of teaching chemistry and can apply them to different levels of instruction; - has the pedagogical methods of communication and can use them in communicative situations in terms of teacher status; - master the methods of teaching chemistry and can apply them to different levels of instruction; - Has skills and research and methods, including research and planning pathways, cognitive ethics, writing and analytical skills, communication and communication skills; - know at the required level the basic laws of chemistry, physical and chemical properties, methods of production and areas of practical use of the main classes of inorganic substances; - know at the required level the theory of structure of organic compounds, their structure and properties, nomenclature, isomerism, laboratory and industrial methods of production, physical and chemical properties, areas of practical use of the main classes of organic substances. 		
MODULE NAME	Module of special subjects	54	credit
PURPOSE OF THE MODULE	The purpose of the module is to provide opportunities to acquire in-depth specialized subject knowledge and skills to advance the activities of teaching chemistry.		
MODULE SUMMARY	Analytical Chemistry - 12 credits; 2. Physical Chemistry - 12 credits; 3. Chemistry of high molecular weight compounds - 3 credits; 4. Methods of solving chemical problems - 3 credits; 5. General Chemical Technology - 3 credits; 6. Physical Research Methods - 3 credits; 7. Colloid chemistry - 3 credits; 8. Special subjects - 15 credits.		
EDUCATIONAL RESULTS OF THE MODULE	A student who has mastered this module: <ul style="list-style-type: none"> - Have some knowledge of analytical chemistry and be able to apply methods of qualitative and quantitative analysis of chemicals in the process of teaching chemistry in general education institutions; -Have a conceptual understanding and practical knowledge of the laws of chemical thermodynamics, chemical equilibrium, thermodynamics of solutions, kinetics of chemical reactions, electrochemistry and apply them in the practice of school chemistry; - know high-molecular-mass compounds, polymerization reactions, polycondensation and other ways of obtaining polymers, their structure, properties and important role in human life and have skills to teach them as part of school chemistry; -Understand and explain to students the essence and distinctive features 		

	<p>of nuclear processes, the structure of the atom and the nucleus of the atom, and the important role of radionuclides in generating electrical energy and providing electrical energy to the public and industrial plants;</p> <ul style="list-style-type: none"> - have the necessary knowledge about the types of chemical production (including in the Republic of Tajikistan), the basic laws of technological processes, the role of modern chemical technology in human life, be able to explain their importance to students in the school chemistry; - know the essence of dispersion systems, widespread in nature and life, the laws that operate in them and their significance, and continually build students' understanding of the importance of such systems and their knowledge; - know the theoretical and practical foundations of physical research methods, without which the teaching of chemistry would not be complete in modern times, and selectively apply them depending on the technical capabilities of the chemical laboratory of general secondary education institutions; - use the development of chemistry in modern times, to use the scientific knowledge obtained in the study of special subjects to form a scientific outlook of students; the number of special subjects - four, they are taught in four credits in the institution of higher professional education, and their educational program is related to the scientific topics of the profile departments; - Be able to use their knowledge and skills during chemistry instruction to enhance students' ability to solve chemical examples and problems and conduct chemical experiments; - To teach students how to discuss, organize chemical debates, and build chemical models, and to help develop students' chemical thinking; 		
MODULE NAME	SPECIAL ITEMS	60	credit
PURPOSE OF THE MODULE	The purpose of this section is to provide students with additional basic knowledge, depending on the goals of the basic and special subjects sections.		
MODULE SUMMARY	The elective section consists of the following modules: module of elective courses in section 1 - 6 credits; module of elective courses in section 2 - 54 credits.		
MODULE NAME	Module of elective subjects of section 1	6	credit
PURPOSE OF THE MODULE	The purpose of the module is to create opportunities for additional knowledge in the basic subjects of the state component.		
EDUCATIONAL RESULTS OF THE MODULE	<p>A student who has mastered the module:</p> <ul style="list-style-type: none"> - has in-depth knowledge gained after studying the major elective subjects; - the knowledge gained in the elective subjects could be compared to the teaching of chemistry in general education. 		
MODULE NAME	Modules of elective subjects in section 2	54	credit
PURPOSE OF THE MODULE	The purpose of the module is to create opportunities for additional knowledge obtained in special subjects.		

EDUCATIONAL RESULTS OF THE MODULE	A student who has mastered the module: - has in-depth knowledge gained after studying special elective subjects; - can use the knowledge obtained in the subjects of choice in their future professional activities.		
MODULE NAME	PRACTICE	18	credit
PURPOSE OF THE MODULE	The purpose of the section is to develop the ability to use theoretical knowledge gained in the course of special activities in the field of chemistry.		
MODULE SUMMARY	1. educational practice - 6 credits; 2. Pedagogical practice - 6 credits; 3. Pre-diploma practice - 6 credits.		
EDUCATIONAL RESULTS OF THE MODULE	A student who has mastered the section: -is able to plan regular training in accordance with the requirements of educational standards and educational programs; - can analyze and evaluate her own behavior as a teacher; - takes into account the possibilities of the modern educational environment; - uses different theories in the educational process; -can analyze competencies and self-improvement needs; - can determine the state of research on the topic of the graduate work in the world scientific centers on the materials of scientific journals and conduct and process scientific experiments to prepare the graduate work.		
MODULE NAME	FINAL CERTIFICATION	9	credit
PURPOSE OF THE MODULE	The purpose of the section is a deep and multifaceted test of theoretical knowledge and practical experience in the chemical sciences, as well as an assessment of the acquired general cultural and professional competencies.		
MODULE SUMMARY	1. Graduate profile work - 6 credits; 2. State examination in special subjects - 1.5 credits; 3.State Examination in Pedagogy and MPH - 1.5 credits		
EDUCATIONAL RESULTS OF THE MODULE	A student who has mastered the section: -know how to conduct research, refer to scientific and professional literature, analyze it, compare research results and research methods; - uses methods of research and information processing; -can clearly, logically correct, concisely and concretely state his opinion in writing on the issue at hand and the results obtained; - can analyze and evaluate the results of his/her research based on previous work and can explain the results achieved based on primary theories and results of previous research; -knows how to work with professional (professional) literature; - can apply the knowledge gained during theoretical research or solving practical questions; - knows the requirements for preparing a scientific text and can work on its basis.		
MODULE NAME	FACULTATIVE CLASSES	18	credit
PURPOSE OF THE MODULE	The purpose of the section is to develop students' knowledge of healthy lifestyles and the ability to manage themselves in emergency situations.		
MODULE SUMMARY	1. Physical Education - 6 credits; 2. Military training - 12 credits.		

EDUCATIONAL RESULTS OF THE MODULE	A student who has mastered the section: <ul style="list-style-type: none"> - understands the social role of physical education in personal development and preparation for professional activity; - passed the initial training of the army defense.
-----------------------------------	--

4. THE PERIOD OF STUDY OF THE EDUCATIONAL PROGRAM

4.1 The period of study of the educational program for 4 years of study (in the form of full-time and part-time training) is 208 weeks, including:

- theoretical training, taking into account the research work of students, practical classes and laboratory work - 121 weeks;
- examination sessions - 21 weeks;
- practice - 12 weeks;
- educational practice - 2 weeks;
- pedagogical practice - 2+2 weeks;
- work practice - 2 weeks;
- pre-graduation internship - 4 weeks.
- final attestation together with the period of preparation and defense of the final **specialized** work - 6 weeks;
- vacations (along with 8 weeks of postgraduate leave) - 48 weeks.

4.2 The maximum amount of training (workload) of a student is set at 45 hours per week, which includes all types of classroom and non-audit training (independent work).

4.3 The weekly class load of a full-time student is 30-36 hours. This number of hours does not include physical education and elective classes.

4.4 In the distance form of education, the student is given at least 144 hours of class time with a teacher.

4.5 Holidays in the school year are at least 10 weeks, including winter vacations of at least 2 weeks.

5. CONDITIONS FOR THE DEVELOPMENT OF THE EDUCATIONAL PROGRAM

5.1 Providing and supporting students

5.1.1 The University has a material and technical base that meets the requirements of current fire safety rules and regulations and conducts all kinds of educational and technical, practical and research work arising from this document.

5.1.2 Each student has unlimited access to the library (digital library) and electronic information and educational environment during the course of study. The electronic library and the electronic information and educational environment can provide access to the student from anywhere where there is the possibility of connecting to it via the Internet. The electronic information and educational environment of the university has the following possibilities: access to curricula, working programs of disciplines and practices, electronic resources of educational materials, publications of electronic library systems that are specified in the educational programs of the discipline; registration of the educational process, results of stage tests and results of the educational program; conducting all forms of classes, the process of evaluation of learning outcomes, which is implemented with the use of electronic education

5.1.3 The balance of the university has dormitories for both students and teachers. In the dormitories comfortable rooms, bathroom, toilet and kitchen are located separately on each floor. The dormitories also have kitchens and fast food outlets. Residents are provided with the necessary furniture (bed, closet, table and chair), as well as beds. Regular work is carried out in the dormitories to improve living conditions.

5.2 Control and the end result of knowledge acquisition.

5.2.1 A final grade is awarded on the basis of all the subjects and practices included in the educational program. The equivalent of the summative assessment corresponds to the following table:

The letter equivalent of grades	Numerical equivalent of grades	%-right answers	Tadic evaluation
A	4,0	$95 \leq A \leq 100$	Great
A-	3,67	$90 \leq A- < 95$	
B+	3,33	$85 \leq B+ < 90$	Good
B	3,0	$80 \leq B < 85$	
B-	2,67	$75 \leq B- < 80$	
C+	2,33	$70 \leq C+ < 75$	Satisfactory
C	2,0	$65 \leq C < 70$	
C-	1,67	$60 \leq C- < 65$	
D+	1,33	$55 \leq D+ < 60$	
D	1,0	$50 \leq D < 55$	
F-	0	$45 \leq Fx < 50$	Unsatisfactory
F	0	$0 \leq F < 45$	

5.2.2 The student's final grade for mastering the educational program for each subject is calculated by the following formula.

$$\text{Final score} = \left[\frac{(P_1 + P_2)}{2} \right] * 0.5 + \text{IR} * 0.5$$

P₁ - the result of the control of the first rating

P₂ - the result of control of the second rating

IR - final control

5.2.3 The order of evaluation of current examinations and final results of mastering each subject and other activities (audit and non-audit) is determined by the Educational and Methodological Council of the university on the basis of the "Regulations on the credit system of training in higher professional educational institutions of the Republic of Tajikistan".

5.3 During the implementation of the educational program TNU has the right:

- the educational process is carried out in the form of authoring theoretical courses and various group-individual, practical and seminars on curricula conducted at the university itself, taking into account regional, national and ethnic, professional characteristics, as well as research work of teachers covering the content of the specialty;
- establish the depth of teaching of certain sections of subjects in the area of basic and special subjects, in accordance with the cycle of vocational training subjects and taking into account the individual characteristics of students;
- to determine the list of qualifications for the specialties of the university, the list of special special subjects, their volume, content, as well as forms of control over their acquisition in addition to the provisions of this educational program;
- To implement the educational program for the specialty 1-31 05 01 02 - Chemistry in reduced terms for students who have secondary vocational education or higher vocational education in the relevant specialties. Reduced terms are determined on the basis of the existing knowledge, skills and abilities of students previously acquired during their studies at other institutions. The term and minimum duration of training is not less than three years. Training in shortened terms is also allowed for persons, the level of education and their ability to specialty are adequate and justified.

5.4 Staffing of the educational process

The staffing of this educational program is provided by the following departments:

- Inorganic Chemistry;
- Analytical Chemistry;
- Organic Chemistry;
- Physical and Colloid Chemistry;
- Applied Chemistry;
- Methods of Teaching Chemistry;
- Technology of Chemical Production.

Also for the implementation of the section of basic subjects and the module of general professional subjects **the following departments of the university are involved**. The qualifications of the managerial staff and scientific-pedagogical personnel correspond to the qualification description specified in the "Job descriptions of employees of institutions of higher professional education".

Full information on the staff of the teaching staff that provides the process of teaching educational programs is available on the official TNU website (see <https://tnu.tj>).

5.5 Educational and methodological support of the educational process

Implementation of the educational program of training specialists with a diploma must be provided with educational and methodical documents on all educational activities, students have access to library collections and databases, the content of which is consistent with the list of subjects of the educational program, the availability of textbooks, teaching aids and guidelines for all subjects and types of educational activities, including all types of laboratory-practical work in the special academic disciplines.

The presence of laboratories is mandatory for laboratory and practical work.

5.6 Material and technical support of the educational process

The university, which carries out a training program for professional specialists, has a material and technical base that meets the sanitary and technical standards and conducts all kinds of laboratory, practical and research work of students, established by the curriculum of the specialty.

5.7 Educational and methodological support for practice

The educational program of preparation for professional activity includes a section of practice aimed at the development of professional skills. For this purpose, three types of training are planned: training and production, pedagogical and pre-graduation. The number of weeks allocated and their duration (semesters) are shown in the following table:

Practitioners	No. semester	Mikdori hafta
Training and production	4,6	2+2
Pedagogical	6,8	2+2
Pre-Release	8	4

Report forms for each type of practice are determined by the Center for Practice and Professional Development TNU and industry units.

5.7.1 Educational practice has an introductory nature, its purpose is to show students the activities of scientific and educational laboratories of specialized departments, institutions of general secondary education and the activities of the staff of these institutions.

This allows students to see directly the process of work organization, professional features and other practical aspects.

Industrial practice is a comprehensive process in which students carry out activities determined by the specialty. The following aspects are defined in the industrial practice:

- orientation in the field of professionalism;
- the trend toward a diversity of research activities in all areas of specialized activity.

Industrial practice is carried out at industrial enterprises in Dushanbe and other regions of the republic, chemical laboratories of health centers and sanatorium-epidemiological centers, regardless of their form of ownership (public or private).

During the production practice for each organization (training center) the university selects supervisors of practice from among the teachers of the department. Practice supervisors advise students on the questions of the production practice and preparation of reporting documents.

Pedagogical practice is a comprehensive process in which students carry out activities determined by the specialty.

Pedagogical practice defines the following aspects:

- orientation in the field of professionalism;
- a trend toward diversity in the career of the future teacher in all areas of teaching;
- Formation takes place in the natural environment of the pedagogical process - the reflective culture, and the subject of the teacher's thought is the means and methods of his or her own pedagogical activity.

Pedagogical practice is carried out in institutions of general secondary education, gymnasiums and lyceums of Dushanbe. In the process of pedagogical training for each institution (training base) the university allocates methodologists from the department of teaching methods, pedagogy and psychology. Methodists advise students in the process of pedagogical training and preparation of documents.

5.7.2.

Graduate internship takes place after studying all the subjects provided in the curriculum and the selection of subjects of choice of modules under the guidance of teachers of the profile department.

The purpose of pre-graduation practice is a comprehensive development of all types of professional activities in the specialty, as well as the formation of general professional and professional competencies, skills and abilities in the workplace institutions of general secondary education and industrial enterprises, and at the same time preparing the student to perform graduate work.

During the pre-graduation internship students become familiar with the methodology of control works on the topic of graduation work, acquire basic skills of research work to prepare the final work.

6. CONTENT OF THE SET OF DOCUMENTS OF THE EDUCATIONAL PROGRAM ON SPECIALTY 1-31 05 01-02-CHEMISTRY (SCIENTIFIC-PEDAGOGICAL ACTIVITY)

6.1 Specialty Curriculum (SC)

The curriculum is considered as part of the package of documents of the curriculum and establishes a list of subjects, the amount of time budget, sequential order and certain periods of training subjects, practices, elective classes, training modules and other types of practical educational activities. The curriculum for current TSU majors includes the following parts:

- the name and symbol of the specialty, qualification, term and form of training;
- The academic calendar (in weeks);
- total time budget (in weeks); - plan of the educational process with a list of sections and required subjects, the number of credits (classroom and nonclassroom), semesters, practices and state certification;
- a list of elective subjects.

The curriculum for specialties developed by TNU in accordance with the regulatory and legal documents and the requirements listed in paragraphs 2 and 4 of this document.

6.2 Work Study Plan (WSP)

The RUP is designed taking into account the chosen qualifications and the requirements of parts of the TNU and state agencies. The work plan of training determines the structure of the special course and the budget of time required for its study; RUP includes a set of academic subjects and

their volume per hour. Table of learning process, the sequence of subjects by courses and semesters, various types of experimental and educational activities, intermediate forms and types of state final certification. RUP is made on the basis of the model curriculum, by the approval of the scientists of the Faculty Council, and approved by the educational department (training department).

6.3. Programs by type of practice

Programs by type of practice (educational and production, teaching, pre-graduation) developed on the basis of the state standard of higher professional education with regard to the minimum requirements for the content and level of training of graduates in the specialty 1-31 05 01-02 Chemistry (scientific-pedagogical activity) in terms of professional competence, practical experience and preparation for professional activity of the graduate.

Programs, by type of practice, include the following parts:

- basic principles of practice organization;
- goal and objectives of the practice;
- content, forms, place and time of practice;
- the result of the development of students' competence after the internship;
- structure and content of the practice;
- setting tasks that students must perform on an obligatory basis during the internship;
- reporting documents on the results of the practice;
- the way students are evaluated on the results of the internship;
- Educational and methodological and informational support of the practice.

Internship programs are compiled by a specialized department with the involvement of the Department of Internship and Work with Young Specialists and the base where the internship is conducted. This document is approved by the educational department (training department).

6.4 The subject curriculum

The subject syllabus is part of the educational program, which describes the goals and objectives of the course (subjects) with a description of topics and additional information, on the basis of which the working program of the subject (syllabus) is developed. The syllabus of the subject consists of a description of the subject, a brief description of the topics and methodological materials, tasks for independent work, test problems, criteria for assessing knowledge and a list of references.

This document is prepared by the profile department, approved by the Scientific and Methodological Council of the Faculty and approved by the Scientific and Methodological Council of TNU.

6.5 Syllabus (Work Program) for Students

The syllabus is a work program for the student with a brief description of the course, the purpose and learning outcomes of the student, as well as the process and method of evaluating the student's progress. The syllabus describes the course to be studied, the purpose and objectives of the course, the list of subjects and the period of study, the assignment for independent work, the procedure for taking tests and control assignments, laboratory work, consultation time and schedule for checking the students' knowledge, the requirements of the instructor, assessment criteria and a list of literature.

The program is developed by each faculty member, reviewed by the department, and approved by the Faculty Scientific and Methodological Council.

6.6 A brief description of the curricula of compulsory subjects and elective subjects

A brief description of the curricula of compulsory subjects and elective subjects is an integral part of the educational program (appendix), which reflects brief information about the taught subject and its content. This document should include the following items:

- subject title;
- a brief description of the subject matter;
- activities;

- language of instruction;
- expected learning outcomes;
- a list of the parts of the item;
- the learning tools used;
- current and summary forms of control.

The outline of educational programs of compulsory subjects and subjects of choice for the specialty 1-31 05 01-02-Chemistry (scientific-pedagogical activity) is developed by the Faculty of Chemistry with the involvement of profile and general university departments. This document is not approved separately without the educational program.

7. GRADUATION CERTIFICATION BY SPECIALTY

7.1 Basic Concepts of Graduation Examination

Final attestation of a specialist in chemistry includes passing the state exam in major subjects and in pedagogy and methodology of teaching chemistry, the defense of the bachelor's thesis.

Graduation certification is conducted to determine the level of theoretical and practical training of a specialist in chemistry to perform professional duties established by this educational program, and to continue training in the master's program in accordance with paragraph 1.7 of this document.

The state exam in major subjects is an integral part of the final certification (certificate of maturity) of the student and must be conducted in accordance with the requirements of the content of the educational program that the student is mastering.

7.1.1. Graduate qualification work

The graduate qualification work must be presented in the form of a computer printout or written by hand. Requirements for the volume, content and structure of the graduate qualification work are determined by the university on the basis of the "Regulations on Graduate Works", approved by the Ministry of Education and Science of the Republic of Tajikistan.

7.1.2. State Examination in Special Subjects

The procedure and programs of the state exam for specialty 1-31 05 01-02-Chemistry (scientific-pedagogical activity) is determined by the university on the basis of methodological recommendations and standard programs, the Regulations on the attestation of graduates, approved by the Ministry of Education and Science of the Republic of Tajikistan.

7.2 Sample state document of higher professional education (diploma)

7.2.1 A graduate who has mastered the program of higher professional education is issued a state sample document of higher professional education (diploma) at the bachelor level by specialty 1-31 05 01-02-Chemistry (scientific-pedagogical activity).

7.2.2 Structure of the Diploma Supplement

In the attachment to the diploma of the state academic level, specialty, a list of subjects and results of the credits mastered during the semesters; GPA for the semester and in general, the results of coursework, practice, the results of state certification and the results of the defense of graduate qualification work, learning outcomes; number and series of diploma of state standard. An application without a diploma is not valid.

8. INTERNAL QUALITY ASSURANCE PROCEDURE FOR THE EDUCATIONAL PROGRAM

8.1 Basic concepts of quality assurance

The quality of education is a comprehensive characteristic of educational activities and training of students, which represents the degree of their compliance with the state standard of education and the basic requirements of stakeholders, as well as the level of achievement of the intended objectives and the results of educational programs.

Quality assurance is the process of creating certain conditions and allocating the necessary resources, which is considered the compliance of the content of the educational program, educational opportunities and tools defined by the purpose of the program in relation to the level of quality.

The internal quality assurance system at the university is a set of organizational structures of the university, internal documentation, indicators, processes, resources to ensure continuous improvement of the quality of educational programs and the development of an unbreakable culture.

8.2. Principles of quality assurance

The principles of quality assurance in TNU:

- TNU is primarily responsible for ensuring and guaranteeing the quality of education;
- Quality assurance meets the requirements of various higher education systems, universities, and students;
- Quality assurance takes into account the needs of students, the community, and other stakeholders;
- regularly reviews and revises educational programs through appropriate university structures;
- periodic self-reporting on the results of students' training in educational programs;
- regular surveys (questionnaires) among students, graduates and employers;
- Involvement of external experts to analyze the quality of educational programs;
- Access to the results of program quality assessment is open to the public.

8.3 Internal quality assurance standards

The internal quality assurance system is based on the Standards and Guidelines for Quality Assurance in Higher Education in the European Higher Education Area (ESG) and consists of the following aspects:

- internal quality assurance policy;
- updating and improving programs;
- student-centered learning;
- Student admission standards, attendance and performance monitoring, recognition and certification;
- standards that take into account fair and transparent hiring, professional development and dismissal processes;
- Standards for educational resources of student support systems (sufficient funding for educational and teaching activities; provision of quality and accessible educational resources, ways to support students);
- information management standards (universities must ensure that relevant information is collected, analyzed, and used to effectively manage educational programs and other activities);
- standards of public information: universities must publish information on the nature of their activities, which must be transparent, clear, objective, relevant, understandable and accessible;
- regular monitoring and periodic evaluation of programs;
- Regular external quality control.

9. RULES OF ADMISSION ACCORDING TO THE EDUCATIONAL PROGRAM

9.1 Citizens of the Republic of Tajikistan and citizens of other countries can apply for the specialty 1-31 05 01-02-Chemistry (scientific-pedagogical activity) at Tajik National University. The number of places for admission to the 1st course on the specialty 1-31 05 01-02-Chemistry (scientific-pedagogical activity) is determined by the Agency for Control in the Field of Education and Science of the Republic of Tajikistan according to the Annex to the License for the right to conduct educational activities.

9.2 On the basis of competition on the results of passing the entrance examinations through the National Test Center under the President of the Republic of Tajikistan (hereinafter - NTC) for the 1st year are admitted persons with secondary (complete) general education. As a continuation of education in the 2nd year, persons with secondary vocational education and higher vocational

education are admitted to the Tajik National University on the basis of the results of entrance examinations (interview).

9.3 Admission to the full-time department is limited to persons under 35 years of age, and there are no age restrictions for correspondence students.

9.4 The plan of admission and the list of documents for admission can be found on the official websites of STCU and TNU. (see <https://ntc.tj> and <https://tnu.tj>).