

Passport of the educational program

Code and classification of the field of education	6B01 Pedagogical Sciences
Code and classification of the direction of training	6B015 Training of teachers in natural science subjects
Number and name of the educational program group	B012 Training of teachers in natural science subjects
Number and name of the educational program	6B01509 ««Chemistry-Biology»»
The purpose of the program	Implementation of education aimed at training competitive highly qualified bachelors of education in the educational program "Chemistry - Biology" with fundamental knowledge and skills, practical skills and leadership skills, ready to make decisions that combine the interests of the individual, society and the state.
Distinctive features of the educational program	Educational program with elements of dual training, knowledge, skills and abilities in the field of indoor and garden floriculture and modern chemistry and chemical safety
Availability of accreditation	Registration number: AV3405, from 27.05.2021 to 26.05.2024
Learning result	<p>After successful completion of this program the trainer will be able:</p> <p>ON1 - to recognize and generalize complex interrelations of the market economy, to evaluate economic processes and phenomena that reveal specific actions for the creation and successful practical activity of an entrepreneur; to identify problems of an economic nature when analyzing specific situations, to suggest ways to solve them, taking into account the actions of economic patterns at the micro and macro levels.</p> <p>ON2 – to analyze events and actions from the point of view of the field of legal regulation; to use the necessary regulations in professional activities and to protect their rights and interests; to navigate the current legislation; to use spiritual and moral mechanisms to prevent corruption.</p> <p>ON3 – to conduct psychological and pedagogical research in order to identify the specifics of human mental functioning, taking into account the peculiarities of age stages, developmental crises and risk factors, in order to assess and analyze the processes of higher nervous activity; apply methods and technologies of educational activities and inclusive education in accordance with the age characteristics of students based on knowledge about the peculiarities of regulation of human behavior and activity at various age levels; to select the means of education and upbringing, methods and technologies of education that meet the modern requirements of traditional and inclusive education; to use the basic theories of motivation, leadership and power to solve managerial tasks; to apply risk management in educational organizations to make managerial decisions to reduce the degree of risk.</p> <p>ON4 - use professional documentation in the state and foreign languages; use Kazakh, Russian and foreign languages in professional and research activities; present their position in a reasoned manner and conduct scientific discussions; perceive and analyze scientific articles in</p>

foreign journals and reports at international conferences.

ON5 - use regulatory legal documents in the field of safety and ecology fundamentals in their activities; predict the danger to living organisms of chemicals based on their structure and properties; conduct a chemical experiment in compliance with safety standards, including synthesis, analysis, study of the structure and properties of substances and materials; use basic methods to protect the life and health of students in the educational process and extracurricular activities, taking into account the danger of biological objects and chemicals.

ON6 - to plan, design and analyze the educational process in the organization of education; to solve the tasks of education and spiritual and moral development of students in educational and extracurricular activities; to develop programs of extracurricular work in biology and chemistry: scientific circles, excursions, field expeditions for study the flora and fauna of the region, the study of the chemical composition of soils, reservoirs, etc.

ON7 - analyze the program of textbooks and methodological literature; use modern pedagogical methods and technologies in planning and conducting classes in biology and chemistry in educational institutions; apply the knowledge gained in chemistry and biology to solve pedagogical problems; plan, organize and conduct research; use modern techniques and means of knowledge control; methodically competently conduct a school experiment, laboratory and practical classes; use modern information and communication technologies and technical training tools.

ON8 - possess basic chemical laws, theories, patterns and chemical transformations for explanation and use in real chemical processes occurring in the educational process; use computational methods to solve various chemical tasks of an educational and scientific laboratory nature; possess methods of safe use of chemical materials taking into account their physical and chemical properties.

ON9 - to use the basic laws of chemical science and fundamental chemical concepts in solving specific professional tasks; to possess the skills of chemical experiment, synthetic and analytical methods for obtaining and researching chemicals and reactions; to calculate the main characteristics of typical processes of chemical technology and nanotechnology based on knowledge of modern chemical production; based on knowledge of safety standards to implement them in laboratory and technological conditions.

ON10 - apply biological knowledge to explain the processes and phenomena of vital activity (physiological processes) of the human body and other representatives of the animal kingdom, plants, indicating their taxonomic group, anatomical, morphological and ecological features (spread on Earth) in professional activities.

ON11 - to compare the structure, components, functions, development, properties of plant, animal cells, tissues, microorganisms, various viruses and extracellular structures with the use of measuring instruments, laboratory equipment, cytochemical, biochemical methods of studying microscopic objects for solving practical problems and application in experimental studies; to use knowledge on inheritance and modification of genetic information of plant cells, animals, microorganisms with the use of virus particles to understand the latest achievements in biotechnology of immune preparations and plant selection.

	<p>ON12 - to carry out qualitative reactions to various substances, separate classes of chemical compounds; to analyze the physico-chemical properties of substances of various nature; to identify functional groups of chemical compounds; to investigate the properties of natural compounds; to evaluate the course of chemical processes in systems; to determine the concentration of reacting substances and their reaction rate; to build phase diagrams; to determine the parameters of catalytic reactions, patterns of chemical and physico-chemical processes.</p> <p>ON13 - predict chemical reaction products by formulas or names of starting substances; determine starting substances by formulas or names of reaction products; predict the effects of various factors on changing the direction of a chemical reaction; use chemical experiment skills, basic synthetic methods for obtaining and analyzing chemicals; evaluate the effectiveness of chemical processes; simulate the hardware design of chemical compounds; choose the method of obtaining a chemical product, select the necessary equipment, evaluate the technological system.</p> <p>ON14 - to distinguish between cultivated and wild plants by species; to use agrotechnics for growing plants of open, closed ground; to accelerate the ripening of fruits and seeds of plants; to make earth mixtures for indoor plants; to follow the rules and techniques of plant care; to design landscaping of green spaces; to make an assortment of plants for the landscaping object taking into account their biology, decorative and climatic conditions of the area; to create landscaping projects using special designations; rationally distribute the functional zones of the landscaped area.</p>
Degree awarded	Bachelor of Education in the educational program "Chemistry - Biology"
List of qualifications and positions	<ul style="list-style-type: none"> - teaching of chemical and biological disciplines in educational institutions in accordance with the objects of professional activity; - work in chemical and biological laboratories, scientific centers, state and public environmental organizations, zoological and botanical gardens, organizations of additional education and upbringing.
Field of professional activity	<ul style="list-style-type: none"> - educational institutions of secondary education; - colleges; - research institutions and laboratories of specialized disciplines; - state and public environmental organizations: nature reserves, nature reserves and natural parks, etc.; - zoological and botanical gardens, plant protection stations; - extracurricular organizations and organizations of additional education and upbringing; - administrative bodies of education.