

## The list of academic disciplines of the university component

**6B01 - Pedagogical sciences**

(Code and classification of the field of education)

**6B015 - Teacher training in natural science subjects**

(Code and classification of the direction of training)

**0114**

(Code in the International Standard Classification of Education)

**B013 - Biology teacher training**

(Code and classification of the educational program group)

**6B01510 - Biology**

(Code and name of the educational program)

**Bachelor**

(Level of preparation)

**set of 2023**

**Developed**

By the Academic Committee of the EP 6B01510 - Biology  
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**Reviewed**

At the meeting of the Quality Assurance Commission  
Natural and Mathematical of the faculty  
Recommended to be for approved  
by the Academic Council of the University  
Record No 4.1 "04" April 2023 y.  
Chairman of the Commission Zheldybayeva B.S.

Approved at the meeting of the Academic Council of the University Protocol No. 8 "25" April 2023.

**Approved**

at the meeting of the Academic Council of the University  
Protocol № 1 "01" of September 2023  
Chairman of the Academic Council of the University Orynbekov D.R.

## Introduction to the Biology Teaching Profession

Discipline cycle	Basic disciplines
Course	1
Credits count	3
Knowledge control form	Examination

### Short description of discipline

*This discipline develops understanding, the ability to organize the educational process of work and improves the pedagogical skills of future biology teachers. Gives skills for the effective use of pedagogical approaches and methodological materials in the subject of biology. Students form an understanding of the specifics of their future professions as a biology teacher.*

### Purpose of studying of the discipline

*to form students` holistic view of the educational complex of the educational organization and of the teacher as the main subject of educational activity.*

### Learning Outcomes

*ON3 Demonstrate scientific ideas about the diversity and systematics of the animal and plant world, knowledge about the human body and animals as an integral system. Possess the methodology of determining plants and animals, the skills of naturalistic work and environmental activities.*

### Learning outcomes by discipline

- *To understand the essence and social significance of your future profession, to show a steady interest in it.*
- *To search, analyze and evaluate information necessary for setting and solving professional tasks, professional and personal development.*
- *To systematize and evaluate pedagogical experience and educational technologies in the field of education based on the study of professional literature, introspection and analysis of the activities of other teachers.*

### Prerequisites

*School course*

### Postrequisites

*Basic and profile disciplines of the EP*

## Age psychology and physiology

Discipline cycle	Basic disciplines
Course	1
Credits count	5
Knowledge control form	Examination

### Short description of discipline

*The course allows you to form an idea of human anatomy and physiology, the specifics and features of age-related development, the patterns of higher nervous activity and functional features of the human nervous system are considered. Forms students` systematic understanding of mental and physiological development in ontogenesis, the main patterns of development and neoplasms of age, the most important mental features of the emerging personality of the child on the basis of taking into account psychophysiological norms.*

### Purpose of studying of the discipline

*Formation of students` ideas about the diversity of approaches to the development of correct, scientific knowledge, mental and physiological development of a person in ontogenesis on the most important issues of psychology and physiological development in the aspect of cultural development. To equip students with theoretical and practical knowledge that contributes to strengthening their professional psychological, pedagogical and physiological training, in-depth study of the section of psychological and physiological knowledge.*

### Learning Outcomes

*ON2 Apply modern teaching technologies and criteria-based assessment, taking into account the individual, physiological and psychological characteristics of students.*

### Learning outcomes by discipline

- 1. the formation of an understanding of the mental and physiological development of a person about different views on the most important issues of physiological development with psychology in the aspect of cultural development.*
- 2. strengthens the professional psychological, pedagogical and physiological training of students.*
- 3. equipping with theoretical and practical knowledge, contributing to the improvement of psychophysiological knowledge.*

### Prerequisites

*School course*

### Postrequisites

*Pedagogical practice Pedagogical practice (psychological and pedagogical)*

## Bases of economics, law and ecological knowledge

Discipline cycle	General educational disciplines
Course	1
Credits count	5
Knowledge control form	Examination

### Short description of discipline

*The discipline is integrated, which includes the main issues and principles in the field of fundamentals of law and anti-corruption culture, economics, entrepreneurship and leadership, ecology and life safety. Features of the use of regulatory legal acts, the ability to use business, ethical, social, economic, entrepreneurial and environmental norms of society. The specifics of environmental, legal, economic, entrepreneurial relations, leadership qualities and principles of the fight against corruption.*

### Purpose of studying of the discipline

*It consists in studying the basic patterns of the functioning of living organisms, the biosphere as a whole and the mechanisms of their*

sustainable development under the conditions of anthropogenic impact and emergency situations; in understanding the concept of corruption, the legitimacy of the fight against it, the content of the state penal policy; in the formation of students' basic fundamental stable knowledge on the basics of economic theory, in instilling the skills and abilities of economic thinking; in introducing students to the theory and practice of entrepreneurship, to the basics of creating their own business; in the formation of theoretical knowledge and practical skills for the development and improvement of leadership qualities.

### Learning Outcomes

ON 1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technology, taking into account modern trends in the development of society.

### Learning outcomes by discipline

- ☒ analyzes the issues of safety and conservation of the natural environment as the most important priorities of life;
- ☒ demonstrates knowledge of the fundamentals of nature management and sustainable development, assesses the impact of man-made systems on the environment;
- ☒ shows knowledge of the main regulatory legal acts of the Republic of Kazakhstan, their understanding and application;
- ☒ shows knowledge of the patterns of development of economic processes, clearly formulates his own position, finds and clearly sets out arguments in its defense;
- ☒ is able to characterize the types of entrepreneurial activity and the entrepreneurial environment, draw up a business plan, create an entrepreneurial structure and organize its activities;
- ☒ knows the fundamental provisions about the role of leadership in managing large and small social groups.

### Prerequisites

School course

### Postrequisites

Basic and profile disciplines of the EP

## Anatomy and Morphology of Plants

Discipline cycle	Basic disciplines
Course	1
Credits count	5
Knowledge control form	Examination

### Short description of discipline

This subject teaches the morphological and anatomical structure of plant cell organoids, anatomical and morphological structure of roots, stems, leaves, reproductive organs, flowers, seeds of lower and higher plants. This also explains the differences and similarities in the structure of plants of lower and higher plants. And also studies the floral structure of higher flowering plants, from which double fertilization occurs. *Цель* To study the internal and external structure of the plant organism, micro-macrostructure of plants, features of adaptation, changes in the process of ontogenesis, methods of reproduction.

### Purpose of studying of the discipline

To study the internal and external structure of the plant organism, micro-macrostructure of plants, features of adaptation, changes in the process of ontogenesis, methods of reproduction.

### Learning Outcomes

ON3 Demonstrate scientific ideas about the diversity and systematics of the animal and plant world, knowledge about the human body and animals as an integral system. Possess the methodology of determining plants and animals, the skills of naturalistic work and environmental activities.

### Learning outcomes by discipline

- To know scientific information about botany, about scientific systematic groups of plants, about the connection of botany with other sciences, about plant life;
- Must master the structure of plant cells, i.e. chemical physical properties of the cytoplasm, submicroscopic structure of organoids present in the cytoplasm, their functions;
- Possess morphological and anatomical structure of vegetative organs of plants;

### Prerequisites

School course

### Postrequisites

Plant Physiology

## Pedagogy

Discipline cycle	Basic disciplines
Course	1
Credits count	5
Knowledge control form	Examination

### Short description of discipline

The content of the discipline is aimed at forming students' holistic understanding of the theoretical and methodological foundations of pedagogical science and the essence of professional pedagogical activity. Studying the course allows you to form the necessary knowledge about the content, principles, forms and methods of organizing a holistic pedagogical process in an educational environment. The study of the course forms the necessary competencies for the successful implementation of modern approaches in teaching and learning.

### Purpose of studying of the discipline

Pedagogy as an academic discipline aims to form students' knowledge about the object and subject of pedagogy, its functions, categorical apparatus, methodology of science. The study of the course provides for the formation of the necessary competencies in the design and evaluation of the pedagogical process in the conditions of an educational institution. The content of the discipline topics allows you to acquire knowledge and skills in the selection and successful application of forms, means, methods of teaching and upbringing.

### Learning Outcomes

ON2 Apply modern teaching technologies and criteria-based assessment, taking into account the individual, physiological and psychological characteristics of students.

### **Learning outcomes by discipline**

1. Knows the basic concepts of the theory of the subject
2. Has knowledge in the system of pedagogical training and makes decisions taking into account the holistic pedagogical process
3. Applies the basic skills of the teacher's profession

### **Prerequisites**

School course

### **Postrequisites**

Basic and profile disciplines of the EP

## **Training practice**

Discipline cycle	Basic disciplines
Course	1
Credits count	2
Knowledge control form	Total mark on practice

### **Short description of discipline**

An active form of preparing students for their future professional activities by monitoring the work of teachers. During the practice, the student understands, analyzes, remembers, listens and studies, forms initial knowledge-skills, skills in pedagogical and research activities. This practice allows you to make sure that your professional choice is correct, evaluate your efforts in the chosen profession, learn to see yourself as a specialist, increases interest.

### **Purpose of studying of the discipline**

formation of students' complete understanding of the chosen profession, acquaintance with the main types and directions of professional activity.

### **Learning Outcomes**

ON3 Demonstrate scientific ideas about the diversity and systematics of the animal and plant world, knowledge about the human body and animals as an integral system. Possess the methodology of determining plants and animals, the skills of naturalistic work and environmental activities.

### **Learning outcomes by discipline**

- acquire new knowledge using modern educational and information technologies;
- understand the principles of work and methods of pedagogical activity;
- to search, critically analyze and synthesize information, to apply a systematic approach to solving the tasks.

### **Prerequisites**

Introduction to the Biology Teaching Profession

### **Postrequisites**

Basic and profile disciplines of the EP

## **Inclusive education**

Discipline cycle	Basic disciplines
Course	2
Credits count	3
Knowledge control form	Examination

### **Short description of discipline**

When studying the discipline, students acquire knowledge about the principles and methodological foundations of inclusive education. Ideas are being formed about modern models of psychological and pedagogical support for children with special needs, the elimination of existing barriers in the legal support of inclusive education and the competence of organization and management in the area of inclusive practice. Get an idea about the models of psychological and pedagogical support for children with disabilities in educational institutions.

### **Purpose of studying of the discipline**

The purpose of this discipline is to familiarize students with the basic provisions of the organization and management of inclusive processes in education; the formation of a dynamic, effective, self-improving specialist, ready for professional activity in an inclusive education, owning innovative technologies for building an educational route for all students, taking into account their individual needs and capabilities, able to provide social psychological and pedagogical support for children and their families.

### **Learning Outcomes**

ON2 Apply modern teaching technologies and criteria-based assessment, taking into account the individual, physiological and psychological characteristics of students.

### **Learning outcomes by discipline**

1. Scientific and practical ideas about the integration of children with disabilities are being formed.
2. Acquainted with the methodological and managerial work of educational organizations in the context of inclusive practice.
3. Understands the peculiarities of the education of children with disabilities in the educational process in inclusive educational organizations.

### **Prerequisites**

Age psychology and physiology

### **Postrequisites**

Basic and profile disciplines of the EP

## **World of Abai**

Discipline cycle	Basic disciplines
Course	2
Credits count	3

**Short description of discipline**

*The discipline is aimed at studying historical facts, the philosophical and artistic foundations of the works of Abai Kunanbaev, Shakarim Kudaiberdiev, which form worldview and aesthetic values, the student's ability to express his opinion, practical skills and perception of such human qualities as morality, honesty, artistic character. The genius of the writers of Kazakh literature and the role of M. Auezov in the study and popularization of Abai's heritage, the significance of his works for history, literature and science are determined.*

**Purpose of studying of the discipline**

*Formation of the meaning of philosophical and ideological being, understanding of the problems raised in the works of Abai Kunanbayuly, Shakarim Kudaiberdiyuly, Mukhtar Auezov and application of the acquired knowledge in the practice of everyday life.*

**Learning Outcomes**

*ON 1 Demonstrate socio-cultural, economic, legal, environmental knowledge, communication skills, apply information technology, taking into account modern trends in the development of society.*

**Learning outcomes by discipline**

- 1) *Analyzes the philosophical and artistic foundations of works, historical facts related to the creative heritage of Abai Kunanbayev, Shakarim Kudaiberdiyev, Mukhtar Auezov*
- 2) *Uses in practice the humanistic ideas of Abai's philosophical and artistic works*
- 3) *Assesses the place and significance of Abai's works in the history of literature and science*

**Prerequisites**

*Kazakh language The module of socio-political knowledge (sociology, political science, cultural studies, psychology)*

**Postrequisites**

*Basic and profile disciplines of the EP*

**Pedagogical practice (psychological and pedagogical)**

Discipline cycle	Basic disciplines
Course	2
Credits count	2
Knowledge control form	Total mark on practice

**Short description of discipline**

*The content of psychological and pedagogical practice is aimed at forming an idea about the peculiarities of the organization of the educational and pedagogical process and the management system in the holistic pedagogical process of the school. The student gets acquainted with all types and directions of the teacher's activities, including the system of work of the class teacher, observation during lessons and extracurricular activities, psychological and pedagogical diagnostics of the age characteristics of the development of students, conducts psychological and pedagogical educational work.*

**Purpose of studying of the discipline**

*The purpose of pedagogical practice is the formation of professional pedagogical competencies related to the design and implementation of the educational process of teaching in the education system, providing conditions for the social and professional adaptation of students, mastering the norms and values of the teaching profession, gaining experience in practical pedagogical activity, becoming a professional orientation of their personality*

**Learning Outcomes**

*ON2 Apply modern teaching technologies and criteria-based assessment, taking into account the individual, physiological and psychological characteristics of students.*

**Learning outcomes by discipline**

1. *Demonstrate theoretical knowledge in practice.*
2. *Own methods of organization of psychological and pedagogical work.*
3. *Apply training and education methods.*

**Prerequisites**

*Pedagogy*

**Postrequisites**

*Pedagogical practice*

**Technologies of the updated content of education and criteria assessment**

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Examination

**Short description of discipline**

*The main goal of reforming Kazakhstan's education system is to update the quality of education and increase the competitiveness of the national education system. Ensuring high quality education that meets international standards of education, the formation of a creative personality ready for self-education, self-education, self-development, involves improving the quality of Kazakhstan's education and achieving an international level.*

**Purpose of studying of the discipline**

*To study pedagogical methods and approaches of effective teaching and learning aimed at the formation of skills of the 21st century.*

**Learning Outcomes**

*ON2 Apply modern teaching technologies and criteria-based assessment, taking into account the individual, physiological and psychological characteristics of students.*

**Learning outcomes by discipline**

- *understands the ideas of updated content and criteria-based assessment of students in social, humanitarian and natural-mathematical subjects;*
- *owns the tools of formative and summative assessment;*
- *uses new approaches and the whole complex of organizational forms, strategies and techniques of active and differentiated learning;*

- systematizes and analyzes the results of the study of lessons;
- demonstrates the skills of reflective analysis of one's own practice.

### Prerequisites

Pedagogy

### Postrequisites

Basic and profile disciplines of the EP

## Electronic educational resources

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Examination

### Short description of discipline

The course consists in getting acquainted with the theoretical and methodological aspects of the technological approach in education, teaches methods of modeling the educational process through the use of modern technologies used in the process of teaching biology, develops the creative potentials of the future biology teacher for further self-education. Forms the motivational orientations of students towards innovative activity and apply a system-activity approach in teaching to achieve personal, meta-subject and subject learning outcomes and ensure the quality of the educational process by means of the taught subject.

### Purpose of studying of the discipline

formation of systematized knowledge in the field of methods of using and creating electronic educational resources.

### Learning Outcomes

ON5 Possess a system of methodological knowledge and skills that ensure readiness to effectively carry out the educational process in biology at school, independence and creativity in their teaching activities. Be able to reconstruct various parts of previously acquired knowledge into a new context in accordance with current trends in the development of biology and use it in their professional activities.

ON6 Structure natural science material in biology and design the process of teaching biology. Critically evaluate scientific content in the field of biology and related sciences, put forward ideas for their transformation.

### Learning outcomes by discipline

- Explain the main varieties, features of the methodology for creating electronic educational resources, trends and prospects for the development of modern educational technologies.

- Develop projects of electronic educational resources using various modern educational technologies: integrated and developmental education, information, student-oriented, etc.;

- Use modern educational technologies, demonstrate the ability and readiness to apply the acquired knowledge in practice.

### Prerequisites

Information and communication technology

### Postrequisites

Form and methods of STEM education

## Methods of organization of extracurricular work on the subject

Discipline cycle	Basic disciplines
Course	4
Credits count	5
Knowledge control form	Examination

### Short description of discipline

The method of organization of extracurricular activities on the subject, considers the content and organization of extracurricular activities, its goals and objectives in the educational process. get acquainted with the forms and types of extracurricular activities, tools to increase the effectiveness of extracurricular and research work. We consider modern methods of organizing and conducting clubs, optional courses in biology, methods of organizing and conducting various forms and types of extracurricular activities

### Purpose of studying of the discipline

Formation of professional pedagogical competence of a bachelor in organization of the pedagogical process aimed at organizing work with students and developing competencies that allow them to carry out professional social and psychological and pedagogical activities in educational institutions outside of school hours

### Learning Outcomes

ON5 Possess a system of methodological knowledge and skills that ensure readiness to effectively carry out the educational process in biology at school, independence and creativity in their teaching activities. Be able to reconstruct various parts of previously acquired knowledge into a new context in accordance with current trends in the development of biology and use it in their professional activities.

### Learning outcomes by discipline

- Formation of students' positive motivation to organize extracurricular activities

- Ability to work in a team, tolerantly perceive social, cultural and personal differences

- The ability to solve the problems of education and spiritual and moral development of students in educational and extracurricular activities

### Prerequisites

Methodology of biology training

### Postrequisites

Production (pedagogical) practice

## Form and methods of STEM education

Discipline cycle	Profiling discipline
Course	4
Credits count	6

**Short description of discipline**

*The course provides for the use of interdisciplinary and applied approaches based on the synthesis of STEM technologies in science, technology, engineering, mathematics, combining learning into a single learning scheme in these areas. The main world trends in education, focused on the study of logical, engineering thinking, imagination, critical thinking, cause-and-effect relationships. STEM technology develops students` research, engineering, technology, mathematics, and design skills.*

**Purpose of studying of the discipline**

*Formation of an educational environment to ensure the quality of education, including with the use of information technologies appropriate to the age characteristics of students and reflecting the specifics of the subject area;*

**Learning Outcomes**

*ON5 Possess a system of methodological knowledge and skills that ensure readiness to effectively carry out the educational process in biology at school, independence and creativity in their teaching activities. Be able to reconstruct various parts of previously acquired knowledge into a new context in accordance with current trends in the development of biology and use it in their professional activities.*

*ON10 Demonstrate knowledge of theoretical disciplines and apply them in professional activities; consolidate the skills of independent planning and conducting research experiments.*

**Learning outcomes by discipline**

*-Perform professional and pedagogical functions to ensure the effective organization and management of the pedagogical process of training future teachers;*

*- Apply modern pedagogical technologies for the implementation of a competence-based approach, taking into account the age and individual characteristics of students;*

*- to organize various types of extracurricular activities: gaming, educational research, artistic production, cultural and leisure activities, taking into account the possibilities of the educational organization, place of residence and the historical and cultural identity of the region.*

**Prerequisites**

*Methodology of biology training*

**Postrequisites**

*Final examination*