The list of academic disciplines of the university component

6B01 - Pedagogical sciences
(Code and classification of the field of education)

6B015 - Training of teachers in Natural science subjects
(Code and classification of the direction of training)

0114
(Code in the International Standard Classification of Education)

B011 - Training of computer science teachers
(Code and classification of the educational program group)

6B01507 - Computer Science and Robotics
(Code and name of the educational program)

Bachelor
(Level of preparation)

set of 2024

Semey 2024

Developed

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Reviewed

Considered
At a meeting of the Academic Quality Commission of the Natural and Mathematical of the faculty
Protocol № 3 "9" of January 2024
At a meeting of the Academic Quality Commission of the Graduate school of physical and mathematical sciences
Recommended for approval by the Academic Council of the University
Protocol № 1 "6" of June 2024

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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 integrated discipline 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 the business, ethical, social, economic, entrepreneurial and environmental standards of society. Specifics of environmental-legal, economic, entrepreneurial relations, leadership qualities and principles of combating 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 preservation of the natural environment as the most important priorities of life;
- Shows knowledge of the basics of environmental 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;
- Demonstrates knowledge of the laws of the 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

Introduction to the profession of computer science and robotics teacher

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

Short description of discipline
The discipline is aimed at developing students` understanding of the purpose, subject and methods of computer science and robotics, the general perception of disciplines of various directions that will be studied and which form the basis of the future specialty. The discipline helps students to get acquainted with the chosen specialty, with the features of computer science and robotics. In the course of studying the discipline, students will master the basic elements of the organization of the educational process, master the skills of working with scientific and educational literature.

Purpose of studying of the discipline
Forming the readiness of future teachers to organize effective scientific, informational and methodological support for the introduction of informatics and robotics in school education and the use of robotic creativity technology in classroom and extracurricular activities in the general education system to develop the creative abilities of students

Learning Outcomes
ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.

Learning outcomes by discipline
1. Use the didactic potential of educational informatics and robotics, special equipment, information technology tools in the implementation of the educational process in the school informatics course;
2. Organize the educational process for the course of informatics in various types of educational institutions at the basic and specialized levels using the capabilities of robotic systems;
3. Verify and evaluate learning outcomes in computer science and robotics.

Prerequisites
School course

Postrequisites
Training practice Methods of teaching informatics and robotics

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.
ON 10 Explore topical issues in professional activity independently.

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 (psychological and pedagogical)

Fundamentals of algorithmization and programming

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

Short description of discipline
The discipline is aimed at studying the basics of algorithmization and programming. When studying the discipline, students will get acquainted with the concept of an algorithm, an algorithm executor, the main control structures (following, branching, a cycle), study the development of algorithms, learn to determine the complexity classes of problems and the complexity of an algorithm. Familiarize yourself with data structures: one-dimensional and two-dimensional arrays. They will learn how to make algorithms for solving problems in an algorithmic language and in the form of flowcharts.

Purpose of studying of the discipline
Formation of basic knowledge about algorithmization and programming, development of skills in compiling algorithms for solving problems of various types and complexity, teaching programming skills using simple and complex data structures.

Learning Outcomes
ON 6 Use modern programming tools and technologies in professional activities.
ON 7 Develop software components, mobile and web applications.

Learning outcomes by discipline
1. Name the main definitions of the basics of algorithmization and programming;
2. Classify algorithms by type, control structures, complexity;
3. Solve problems of algorithmization and programming of varying complexity.

Prerequisites
School course

Postrequisites
Python Programming C++ Programming Fundamentals of Web Development 3D-programming

Theoretical basics of informatics

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

Short description of discipline
The subject organizes preparedness in such matters that are related to the theoretical foundations of information processing, using computer technology, students will take concepts about the types and structures of variables that in the future will help students to find out and solve practical problems of improving variables that will arise in the course of professional work. The concepts of important concepts of computer science are established.

Purpose of studying of the discipline
To form an idea of the fundamental concepts of computer science: the foundations of information theory, the theory of digital automata, the theory of algorithms, the analysis of the effectiveness of algorithms, information modeling and the semantic foundations of computer science.

Learning Outcomes
ON3 Use basic knowledge in the field of computer science and information technology in cognitive and professional activities.
ON 4 Effective use of hardware and software components of computer networks and ensure information security.
ON 5 Organize the digitalization of education using modern digital tools and services.

Learning outcomes by discipline
1. Use the basic concepts and definitions of informatics in professional activities;
2. Carry out basic measures to protect information when solving professional problems;
3. Explore the processes of creation, accumulation and processing of information and methods of information transformation.
Prerequisites
School course
Postrequisites
Computer Systems Architecture and Operating Systems Databases and Information Systems

Computer graphics and graphic packs

Discipline cycle	Profiling discipline
Course	1
Credits count	5
Knowledge control form	Examination

Short description of discipline
During the study of the discipline students will master the methods of processing vector and raster images in graphic editors. At the same time, they will learn to reflect the process of data processing, to establish links between objects. Also, students will get acquainted with the possibilities and principles of work in modern graphics packages, learn how to create and edit images of varying complexity, learn various techniques and methods for processing vector and raster graphics.
Purpose of studying of the discipline
The purpose of the discipline "Computer Graphics and Graphics Packages" is to study modern methods of creating computer graphics and the formation of skills to use them in professional activities. Within this discipline, students gain the necessary knowledge to work with raster and vector graphics, which they can effectively use in their professional activities in the future.
Learning Outcomes
ON3 Use basic knowledge in the field of computer science and information technology in cognitive and professional activities.
ON 4 Effective use of hardware and software components of computer networks and ensure information security.
ON 5 Organize the digitalization of education using modern digital tools and services.
Learning outcomes by discipline
1. Use knowledge in the field of computer graphics;
2. Work with graphic packages;
3. Create graphic images of various types and complexity.
Prerequisites
School course
Postrequisites
Basics of computer simulation Fundamentals of computer video editing

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.
ON 10 Explore topical issues in professional activity independently.
Learning outcomes by discipline
ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
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

Pedagogical practice (psychological and pedagogical)

Discipline cycle	Basic disciplines

Course	1
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.
ON 10 Explore topical issues in professional activity independently.

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

Python Programming

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

Short description of discipline
In the course of studying the discipline, students will learn how to create console programs, consider the syntax of the language, get acquainted with the input / output operators and their parameters, solve many problems in programming linear, branching and cyclic algorithms. They will work with various data types, including string data type, one-dimensional and multidimensional arrays, study the issues of algorithm tracing, get acquainted with the PyGame library for creating 2D games.

Purpose of studying of the discipline
Formation of ideas about programming languages; acquaintance with the fundamental concepts of algorithms and programming languages; learning how to write programs in a high-level language; mastering the Python programming methodology.

Learning Outcomes
ON 6 Use modern programming tools and technologies in professional activities.
ON 7 Develop software components, mobile and web applications.

Learning outcomes by discipline
1. Write and analyze programs and applications;
2. Apply different algorithms to solve problems;
3. Use Python libraries.

Prerequisites
Fundamentals of algorithmization and programming

Postrequisites
Web development in Python Object Oriented Programming in Python Solving programming tasks

Training practice

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

Short description of discipline
Educational practice includes methods for solving practical problems in the field of modern computer technology and programming, aimed at teaching programming skills in high-level languages; development of the ability to independently acquire new knowledge using modern information technologies; general scheme of the development algorithm, acquaintance with the model of development and correction of programs, mastering methods for solving typical problems and applying these methods in professional activities.

Purpose of studying of the discipline
To develop programming training in high- level languages, to master the techniques of solving practical problems in the field of programming, to teach yourself to make a program, to be able to apply in professional activities.

Learning Outcomes
ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.

Learning outcomes by discipline
1. Organize their own activities, based on the goals and ways to achieve them, determined by the head;
2. Use information and communication technologies in professional activities;
3. To carry out the selection and analysis of information for the effective performance of professional tasks.
Prerequisites
Introduction to the profession of computer science and robotics teacher
Postrequisites
Pedagogical practice (psychological and pedagogical) Pedagogical practice

Methods of teaching informatics and robotics

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
In the course of studying the discipline, students get acquainted with the methodology of teaching computer science and robotics, its goals and objectives, learn to keep school records, plan classes, gain experience in using innovative teaching systems for modern computer science and robotics, and also learn to organize and conduct extracurricular activities. The discipline covers the organization and conduct of distance learning, project activities and STEM-learning in accordance with the updated educational base.
Purpose of studying of the discipline
Theoretical and practical training of students in the field of teaching modern computer science and robotics at propaedeutic, basic courses in primary school and professional courses in high school, as well as the formation of practical skills for effective educational and educational work in general education and vocational schools, the development of creative potential necessary for teaching computer science in school differentiation.
Learning Outcomes
ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.
Learning outcomes by discipline
1. Use modern ICT to organize the activities of students in the process of mastering computer science;
2. Use methods of organizing research activities with students of different ages;
3. To organize the collective, group and individual activities of students in the classroom and after school hours in informatics.
Prerequisites
Introduction to the profession of computer science and robotics teacher
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.
ON 10 Explore topical issues in professional activity independently.
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
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying historical facts, the philosophical and artistic foundations of the works of Abay 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 Kudaiberdiuly, 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
The module of socio-political knowledge (sociology, political science, cultural studies, psychology)

Postrequisites
Basic and profile disciplines of the EP

Technology updated content of education and criterion assessment

Discipline cycle	Basic disciplines
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
The discipline allows students to get acquainted with the updated educational program and effective teaching methods used in the modern educational process. Within the framework of the discipline, practical orientation of students is carried out on the use of modern tools for assessing learning outcomes, preparing and conducting summative and formative assessment and assessment by criteria. The passage of the discipline allows you to develop professional competencies, activate the creative and critical thinking of students.

Purpose of studying of the discipline
Teach students to use effective methods of teaching the updated program. They take into account the all-round development of the student, the development of critical and creative thinking, skills in the field of information and communication technologies, research skills, as well as preparation for lifelong learning.

Learning Outcomes
ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.

Learning outcomes by discipline
1. Use modern methods and technologies to diagnose student performance;
2. To educate, educate and develop the social, adolescent, psychophysiological and personal characteristics of students, including students with special educational needs;
3. Organize the exchange of practical experience through group work.

Prerequisites
Pedagogy

Postrequisites
Basic and profile disciplines of the EP

Basics of computer simulation

Discipline cycle	Profiling discipline
Course	2
Credits count	5
Knowledge control form	Examination

Short description of discipline
Within the framework of the discipline, students get acquainted with the basic concepts of computer modeling, study the issues of building information, mathematical, simulation models. They study the issues of building models of random processes and random number generators, get acquainted with the concept and classification of fractals. The main part of the discipline is aimed at developing practical skills in working with various application software and building models of various types and complexity.

Purpose of studying of the discipline
The main purpose of studying the discipline is to study the basics of modeling theory, acquire skills in building mathematical models of various classes, conduct experiments with models on a computer, instill practical skills for the implementation of tasks in this subject area.

Learning Outcomes
ON3 Use basic knowledge in the field of computer science and information technology in cognitive and professional activities.
ON 4 Effective use of hardware and software components of computer networks and ensure information security.
ON 5 Organize the digitalization of education using modern digital tools and services.

Learning outcomes by discipline

1. Use the terminology in the field of computer modeling;
2. Build computer models of various types;
3. Build computer models using various software.

Prerequisites

Computer graphics and graphic packs

Postrequisites

Fundamentals of computer video editing

Pedagogical practice

Discipline cycle	Basic disciplines
Course	2
Credits count	7
Knowledge control form	Total mark on practice

Short description of discipline

Masters modern pedagogical technologies, gets acquainted with the computer science and robotics classrooms of the school, with educational work, with the plan of extracurricular and educational activities, masters the methodology of classes, individual research methods used to study students. To participate in the work of a subject teacher and a class teacher, to get acquainted with the work plan of a teacher and a class teacher, to learn to define specific educational tasks taking into account the age and individual typological differences of students.

Purpose of studying of the discipline

Consolidation and deepening of knowledge in psychological, pedagogical, methodological and special disciplines, the formation of pedagogical skills, skills and competencies based on theoretical knowledge.

Learning Outcomes

ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.

Learning outcomes by discipline

1. Carry out a general didactic and psychological analysis of the lesson;
2. Compile a psychological and pedagogical description for a class and an individual student;
3. Use the characteristic features of the organization and planning of the work of the subject teacher and the class teacher.

Prerequisites

Pedagogical practice (psychological and pedagogical) Pedagogy

Postrequisites

Pedagogical practice

Academic writing and the basics of scientific research

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

Short description of discipline

In the process of studying the discipline, oral and written speech develops, knowledge of the norms of the literary language, the key principles of the scientific approach, methods of data collection and analysis, as well as the basics of scientific publishing are formed. During the study, students will be able to master the language means of scientific style, improve the skills of creating and formatting their own scientific texts, as well as develop critical thinking and prepare for independent scientific work.

Purpose of studying of the discipline

The purpose of studying the discipline is to develop students as authors who can effectively and argumentatively express their ideas, conduct research and present results in accordance with scientific standards and requirements, as well as familiarize students with the basics of the scientific method and research process, including the formulation and verification of hypotheses, data collection and analysis, interpretation of results and drawing conclusions.

Learning Outcomes

ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.

Learning outcomes by discipline

1. Have academic writing skills;
2. Understand the basics of scientific research;
3. Be ready for further research growth.

Prerequisites

Information and communication technology

Postrequisites

Production (pedagogical) practice

Pedagogical practice

Discipline cycle	Basic disciplines
Course	3
Credits count	5
Knowledge control form	Total mark on practice

Short description of discipline

Practice of mastering professional and pedagogical skills, skills of independent educational work; consolidation of theoretical knowledge in pedagogy, psychology and basic disciplines; formation of professional skills, development of professional qualities of a teacher. In the course of practice, the student prepares for the position of a computer science teacher in a secondary school. The theoretical knowledge gained by students in the course of studying theoretical courses is deepened and consolidated, the basic skills of teaching informatics courses are being mastered, and the work of an informatics teacher is being introduced.

Purpose of studying of the discipline

The ability to design and construct a lesson, mastering methods of developing thinking that can differentiate, analyze and generalize the knowledge gained to achieve a pedagogical goal, methods of self-control, control, selection of effective methods and means, planning, organizing and conducting lesson and educational work, the formation of pedagogical skills and abilities

Learning Outcomes

ON2 Apply modern teaching technologies and criteria- based assessment, taking into account the individual, physiological and psychological characteristics of students.
ON 10 Explore topical issues in professional activity independently.

Learning outcomes by discipline

1. Plan, control, analyze the lesson;
2. Form a summary of the educational hour and extracurricular activities;
3. Develop visual aids for lessons and educational hours.

Prerequisites

Pedagogical practice

Postrequisites

Production (pedagogical) practice

Solving programming tasks

Discipline cycle	Profiling discipline
Course	3
Credits count	5
Knowledge control form	Examination

Short description of discipline

This discipline is aimed at repetition and systematization of students` knowledge in the field of solving programming problems. As part of the study of the discipline, students consider the principles of solving problems using simple and complex data structures, study methods for analyzing algorithms, such as probabilistic and amortization, and also solve problems using sorting, filtering data and data search algorithms.

Purpose of studying of the discipline

The purpose of studying the discipline is to systematize and develop practical skills for solving programming problems.

Learning Outcomes

ON 6 Use modern programming tools and technologies in professional activities.
ON 7 Develop software components, mobile and web applications.

Learning outcomes by discipline

1. Solve simple and complex programming tasks;
2. Use complex data structures in programming;
3. Find non-standard ways of solving programming problems.

Prerequisites

Python Programming C++ Programming Object Oriented Programming in Python

Postrequisites

Production (pedagogical) practice