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Higher and Postgraduate Educational Programs

☐Project EP ☐Participant of project EP

Date of registration in the Registry

03.06.2020

Registration number

6B06100247

Date of EP passport updating

24.07.2026 23:56

Field of education

6B06 Information and Communication technologies

Direction of personnel training

6B061 Information and Communication technologies

Group of educational programs

B057 Information technologies

Educational program

6B06103 Architecture of Information Systems

EP purpose

Training of qualified personnel in the field of information system architecture who possess modern methods of des information systems in order to optimize their use for solving applied problems.

EP type

Acting EP

Level on NQF

6

Level on SQF

6

EP distinctive features

No

Language of education

Russian Kazakh English multilingual

Professional Standard for EP

Exists

№	Name of professional standard
1	Software architects
2	Managing architecture of computer systems

Professional standards (career standards)

Professional standard has been used at developing EP ☒

Professional standard №1

Professional standard

Управление архитектурой компьютер



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CCEA

Professions

Profession №1

Profession

Архитектор информационных систем

Уровень по ОРК

6

Labor functions

Сопровождение ИС Создание арх

Volume of the credits

240

Degree to be conferred

Bachelor

Period of study

4

Date of approval EP on the Academic Council

27.04.2026

☒Existence of the annex to the license for the direction of personnel training

The license number on the direction of training

KZ49LAM00007465

☐The training format is online

☒EP accreditation existence

Atlas of new professions

<https://atlasbt.enbek.kz/profession/425>
[Архитектор ИТ-экосистем](#)

Regional standard

<https://enic-kazakhstan.edu.kz/files/1744378861/rl-k-kartasy-zhet-su-oblysy.pdf>
VR/AR архитекторы

The formed educational outcomes

№	Educational outcome	Code	Reflect
1	Builds mathematical and physical models, sets mathematical and physical tasks, conducts qualitative mathematical and physical research, based on the analysis,	ON1	Созд
2	To speak Kazakh, Russian, foreign languages, using a variety of means of oral and written communication to solve professional problems.	ON2	Сопр
3	Design information models, uses modern DBMS for building, managing and applying databases; documents the processes of creating information systems at	ON3	Созд
4	Modify existing software to correct errors, adapt to new hardware, update interfaces and improve performance.	ON4	Сопр
5	Apply professional knowledge in the field of computer science, information technology, information security and data protection for the organization and	ON5	Сопр
6	To master the aspects of human-machine interaction and methods of development, evaluation and implementation of interactive computer systems and digital	ON6	Сопр

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7	Apply knowledge in the field of information systems architecture to create and design cybernetic, intelligent robotic, information systems, networks and	ON7	
8	Have the ability to evaluate and apply research methods and innovative approaches to understanding social, socially significant phenomena and processes in the legal,	ON8	
9	Apply the basics of the development of specifications of software complexes, standard methods of design of algorithms and basic techniques of their design;	ON9	Сопр
10	To investigate the infrastructure of the enterprise and defines information data flows, data exchange processes, through modeling; describes the functional	ON10	Сопр
11	To use various types of information and communication technologies in professional activity: Internet resources, cloud and mobile services for the search,	ON11	Сопр
12	Analyze their own and foreign experience in the development and implementation of information systems, interacts with experts in other subject areas in the design	ON12	Созд

Data on disciplines

№	Name of discipline	Short description of discipline	Cycle
1	Fundamentals of Scientific Research	The goal is to form knowledge about the principles, technologies, practical methods and techniques of conducting scientific research based on modern achievements of scientists. Forms the basic foundations of scientific culture and ethics, flexible perception of scientific texts, skills of effective application of acquired knowledge in planning and organizing research work, the ability to analyze and summarize research results.	GED
2	Ilyastanu	The purpose of the discipline is to develop a deep-thinking personality with high aesthetic taste, appreciating literature, art, traditions, culture and language of the Kazakh people through a deep and comprehensive study of the works of Ilyas Zhansugurov. Forms an understanding of the importance of the works of Ilyas Zhansugurov in the development of the Kazakh literary language; skills of intellectual and creative thinking, the ability to cherish the values of national and spiritual heritage.	GED
3	Fundamentals of Financial Literacy	The course is aimed at gaining knowledge and skills in the field of personal finance management. Also, as part of the course, students will learn how to use in practice all kinds of tools in the field of finance, save and increase savings, plan a budget competently, learn how to analyze financial information and navigate financial products to choose an adequate investment strategy.	GED
4	Basics of Law and Anti-Corruption Culture	The objective is to familiarize students with the fundamental branches and institutions of law, the foundations of anti-corruption culture, as well as the patterns of emergence, development, and functioning of the state and law. The course cultivates anti-corruption awareness and a high level of theoretical knowledge concerning the primary functions of law within the state and society, its impact on the development of the rule of law and civil society, and the value of inclusion as an integral component of a just and equitable legal order. Particular emphasis is placed on fostering students' understanding of the importance of human rights for all individuals, regardless of their social, cultural, physical, or other characteristics.	GED
5	Ecology and Life Safety Basics	Purpose – the goal is to develop knowledge of the fundamentals of ecology, sustainable development, and life safety, enabling the analysis of ecological processes, the assessment of the socio-environmental consequences of anthropogenic activities, the assurance of environmental safety, and the application of methods and technologies for protection in emergency situations. Develops the ability to assess the impact of environmental factors on human health; to forecast ecological processes for planning and implementing measures aimed at enhancing life safety and ensuring environmental security; and to make informed decisions in adverse environmental and emergency situations, taking into account the potential consequences of accidents, disasters, and natural hazards within the framework of sustainable development principles.	GED



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6	Economics and Entrepreneurship	society, develop economic thinking, and provide knowledge of the theoretical foundations and practical skills in the field of entrepreneurship. The program is aimed at forming a comprehensive understanding of the functioning of the economy, while delivering business education focused on acquiring applied competencies in various areas of entrepreneurial activity. Special attention is given to issues of sustainable development, efficient resource use, and the implementation of lean production principles as key elements of effective and environmentally responsible business practices. The course also explores the specifics of creating and successfully managing a business, taking into account modern requirements for environmental and social responsibility in entrepreneurship.	GED
7	Basics of Information Systems	Studies the main models of information processes, organization of information processes at the physical and channel level, studies modern methods and models for building information systems of various types. Forms students' special knowledge in the field of building models and methods for developing information systems of various classes and purposes.	BD
8	Professional Terms in the Field of Information Systems	Studies English as a necessary and sufficient level of communicative competence, which will allow to use a foreign language in various fields of official business, professional activity, in scientific and practical work, in communication with foreign partners, for self-education and other purposes.	BD
9	Architecture and Design of Information Systems	The discipline gives students an idea of modeling the use of a computer as a method of scientific research, as a tool for research activities. Studies the basic concepts and properties of models; general principles of computer modeling; technology for building models.	BD
10	Algorithms, data Structurec and Programming	Discipline studies the basic concepts of the algorithm, the basic structures of the algorithms, the concept of a structural approach to the development of algorithms, the basic concepts of programming, the use of subroutines when developing programs, algorithmic languages, the assignment of an algorithmic language and the requirements for it, the concept of procedural oriented languages.	BD
11	Computational Mathematics	The course studies the basic concepts of higher mathematics and their applications within this discipline. Contributes to the development of mathematical intuition, education of mathematical culture, the ability to use the learned techniques and methods to solve specific problems.	BD
12	Introduction to Artiicial Intelligence	The discipline is aimed at studying the basic concepts, methods and algorithms underlying the creation and application of artificial intelligence. Within the framework of this subject, students study the theoretical foundations of machine learning, neural networks, natural language processing algorithms and computer vision. They will also get acquainted with the ethical, social and legal aspects of the application of artificial intelligence in various spheres of life.	BD
13	Infographics and Data Visualization	The discipline "Infographics and Data Visualization" aims to deepen theoretical knowledge and develop practical competencies in the field of visual representation of information. The course focuses on mastering modern computer technologies that make it possible to effectively organize and visualize large amounts of data, as well as demonstrate the spatial and temporal relationships between various elements.	BD
14	Architecture of Computer Systems	In the course of studying the discipline, students will receive systematic knowledge about the architecture of computer systems, the organization and basic principles of computer devices, storage devices, processors and computer systems, the principles of building computer systems architectures; types of computer systems and their architectural features; the organization and principles of the main logical blocks of computer systems; information processing processes at all levels of computer architectures.	BD



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15	Machine Learning	information about the application of individual classification and regression algorithms. Students learn various machine learning algorithms and their applications in various fields such as computer vision, natural language processing, recommender systems, and others. Using the acquired knowledge and skills, students will be able to solve a wide range of classification and regression problems, analyze the influence of individual features on the work of classifiers and regression models, reduce data dimensionality, visualize results, and evaluate the quality of machine learning models.	BD
16	Operating Systems	The purpose of studying this discipline is to provide students with basic knowledge and skills in the field of operating system development and implementation. The course program includes a historical analysis of the evolution of operating systems over the past five decades, as well as a detailed examination of the architecture and functionality of the main components typical of most modern operating systems.	BD
17	Innovative Technologies of Protecting Digital Information	Teaches information protection techniques in computer networks; data protection tools from the harmful effects of computer viruses; basic software information protection methods and anti-virus protection methods when working with computer systems and organizational measures.	BD
18	IT Project Management	This discipline involves the formation of theoretical knowledge, skills and practical skills for solving problems that arise in the management of IT projects. Development of skills and practical skills for effective project management in various sectors of the economy using automated systems.	BD
19	3D Modeling	Considers the basics of modern three-dimensional graphics and animation, their development of the principles of work and the basics of modeling. An important task of mastering the discipline is to obtain solid knowledge and acquire skills in the use of new technologies for collecting and processing spatial data, creating three-dimensional objects.	BD
20	Modeling Information Processes and Systems	The discipline considers the main classes of models and modeling methods, principles of building models of information processes, methods of formalization, algorithmization and implementation of models using modern computer tools; methods of conducting computational experiments using simulation modeling techniques.	BD
21	Cloud Databases and Services	A course devoted to studying the principles of design, deployment, and management of databases in a cloud environment. The course covers cloud computing models (IaaS, PaaS, SaaS), cloud DBMS architecture, scalability, fault tolerance, and data security. It also covers popular cloud platforms such as Amazon Web Services (AWS), Microsoft Azure, Google Cloud, and their services for working with databases (e.g., Amazon RDS, Firebase, Azure SQL).	BD
22	Vector and Raster Graphics	Provides for the theoretical study and practical development of the basics of computer graphics, the study of computer technologies for the processing of graphic information, since professional activities of a modern specialist in the field of information technology is associated with the widespread practical application of various methods of computer processing of graphic information.	BD
23	Virtual and Augmented Reality	The course covers the basics of virtual and augmented reality technologies, principles of VR/AR application development, and tools for creating an interactive environment. The fields of technology application, features of user interaction and development prospects are analyzed.	BD
24	Computational Physics	When studying the discipline, modern theoretical approaches, mathematical modeling methods, and numerical methods for solving physical problems are considered. The course develops professional competencies in the application of computational technologies for the analysis and modeling of physical processes and systems. Students acquire theoretical knowledge and practical skills in developing, implementing, and applying physical and mathematical models to solve fundamental and applied problems in physics.	BD

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ЕДИНАЯ ПЛАТФОРМА
ВЫСШЕГО ОБРАЗОВАНИЯ

English

25	General Physics	fundamental interactions of nature governing the motion of matter, are considered. The discipline is aimed at developing students’ modern understanding of the physical picture of the world, research skills, the ability to obtain and process experimental results, as well as skills in modeling physical processes when solving specific problems.	BD
26	Project Research	The main content of the course reflects the competence orientation of preparing students for active participation in modern intellectual technologies, involving the possession of skills and abilities of research activities, ranging from the preparation of writing a scientific article to writing a scientific paper and up to its public defense, as well as in connection with the search for sources of funding for various research projects.	BD
27	Programming in High Level Language	When studying the discipline, students will acquire the skills to develop complex programs using modern tools of the high-level C# language, master modern technologies for creating programs in the C# programming language, and will be able to test and verify programs.	BD
28	Engineering and Computer Graphics	The discipline includes three sections: descriptive geometry, engineering graphics and computer graphics. Descriptive geometry addresses issues about the subject and method of descriptive geometry. Engineering graphics considers issues related to design documentation, drawing design. In the section computer graphics, work in the graphics program AutoCAD is studied.	BD
29	Mathematical and Computer Modeling	The discipline examines the main classes of models and modeling methods, principles of building models of information processes, methods of formalization, algorithmization and implementation of models using modern computer tools; methods of conducting computational experiments using simulation techniques.	BD
30	Programming Technology	When studying the discipline, students will acquire the skills to develop complex programs using modern tools for describing and supporting projects at an abstract level, master modern technologies for creating programs in a procedural-oriented language using object-oriented programming methodology.	BD
31	Digital Animation Technology	Introduces the student to the basic digital technologies needed to implement projects in various areas of design. Forms the initial skills of using application programs in the field of raster, vector and 3D graphics; animations; video and audio editing; web design, presentation graphics, etc.	BD
32	Development of Electronic Courses	The discipline is aimed at studying the methods of preparation and use in the educational process of electronic courses; technologies of collective creation and sharing of electronic documents and audio-visual materials for their application in the educational process and scientific research.	BD
33	AI Visualization and Tools	The discipline examines the results of artificial intelligence and data representation methods, as well as the use of modern tools and platforms. Approaches to creating graphs, dashboards, and interactive visualizations will be analyzed, and data analysis and interpretation skills will be developed.	BD
34	PL/SQL Programming	The purpose of the course is to provide students with practical skills in working with the PL/SQL language. They will learn how to write procedural code, create structured queries, develop subroutines, and understand syntax. The course covers all the necessary aspects, from basic DML operations to advanced techniques and scripting. Upon completion of the course, students will have a solid knowledge base, including data types, execution flow management, and error handling, which will allow them to use PL/SQL effectively in their work.	BD
35	Databases in Information Systems	This course covers the basics of database design methodology: conceptual, logical, and physical design based on hierarchical, network, and relational databases. The basics of description languages, database manipulation, and query creation languages are discussed.	PD



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36	Internet of Things	enable them to use modern information and communication technologies in various fields of professional activity, scientific and practical work, for self-educational and other purposes. Along with the practical goal, the course implements educational and educational goals, contributing to the expansion of students' horizons, increasing their general culture and education.	PD
37	Computer Networks	The discipline studies the principles of functioning of the main levels of OSI, methods of transmitting, storing, searching, processing, and presenting information. Introduces the technologies of integration of local networks into the global Internet and data transmission in the global network; the functionality of communication equipment and technologies for their implementation; tools for analyzing traffic in networks and methods for minimizing it; the basics of designing local networks and their integration into global networks.	PD
38	Mobile Application Development	Discipline introduces students to the basic principles of developing applications for the Android and IOS operating systems and the technology of creating mobile applications using the Java and C # languages through Android and IOS.	PD
39	Object Oriented Programming	The purpose of the discipline is to prepare students for professional software development using an object-oriented approach. The training includes learning and applying the principles of encapsulation, inheritance, and polymorphism, as well as creating classes, client applets, and standalone applications based on real-world requirements from customers and employers.	PD
40	UX/UI Design	The purpose of this discipline is to develop the skills to develop a user interface using tools that allow solving standard tasks of professional activity based on information and bibliographic culture using information and communication technologies and taking into account the basic requirements of information security.	PD
41	CAD Systems	The discipline studies automated systems that are designed to implement a particular information technology of design implementation. Students will get acquainted with technical systems that allow, thus, to automate and ensure the independent functioning of the processes that make up the development of projects.	PD
42	Digital Design Technologies	The course is aimed at studying modern digital tools and methods for information systems design. The course covers modeling technologies, computer-aided design, visualization, and the development of architectural solutions. Particular attention is given to the use of software tools for analyzing, designing, and optimizing the structure of information systems.	PD
43	Intelligent Robotic Systems	Discipline is devoted to the basics of the theory and methodology of creating intelligent systems and robotic systems. The course outlines the basics of the theory of intelligent systems: the representation of knowledge, methods for finding solutions. The methodology and examples of creating expert systems are given. The basics of the theory of image recognition and image recognition systems, communication with a computer in a natural language and speech communication systems are considered.	PD
44	Extended Databases (NoSQL)	The course is dedicated to studying the fundamental concepts of the PL/SQL language, including its procedural paradigm, structured query syntax, subroutine structure, and data manipulation operators (DML) of varying complexity. Starting with an introductory overview of PL/SQL, students will consistently master the basic data types (strings, numbers, booleans, arrays), execution flow control mechanisms, and error handling strategies, which will allow them to form a solid foundation for further language learning.	PD
45	Big Data	The Big Data course covers technologies and architectures designed to work with scalable and distributed data processing systems. The concepts of processing streaming and unstructured data, the basics of distributed computing, data warehouses (for example, HDFS, NoSQL databases), frameworks and platforms such as Hadoop, Spark, Kafka are studied.	PD

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46	Programming in the Arduino Environment	of microcontroller programming. System analysis of the applied area, formalization of solutions of applied problems and processes of information systems; development of projects for automation and Informatization of applied processes and creation of information systems in applied areas; implementation of works on creation, modification, implementation and maintenance of information systems and management of these works.	PD
47	Frontend-Development	The discipline studies modern technologies and tools of frontend development: HTML, CSS, JavaScript, as well as popular frameworks and libraries such as React, Vue.js or Angular. The course covers the principles of the component approach, adaptive and cross-browser layout, working with APIs (for example, via fetch or axios), the basics of routing and state management (for example, using Redux or Vuex).	PD
48	Basics of Web Development	The discipline covers key web development technologies: HTML, CSS, JavaScript, as well as the basics of client-server architecture. Students get acquainted with the process of developing web pages, their styling and interactivity, learn how the browser works, the HTTP protocol, URL structure and the basics of adaptive layout. Development tools and environments, the basics of working with web servers, and an introduction to backend development are also covered.	PD