EDUCATIONAL PROGRAM

6B06114 Information Systems

code and name of the educational program

Level: *Bachelor's*

Approved
by the Board of Directors of JSC
«K.Kulazhanov KazUTB»
"28" 03 2025 protocol No. 3

Recommended
by the Academic Council of JSC
«K.Kulazhanov KazUTB»
"28" 03 2025 protocol No. 8

Astana–2025

CONTENT

Preface

Educational program "6B06114 - "Information Systems" was developed in accordance with the requirements of the State Mandatory Standard of Higher and Postgraduate Education, approved by the Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2 and based on the professional standards "System and Network Administration" (Appendix No. 9 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022), Database administration (Appendix No. 1 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022) and Software development (Appendix No. 7 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022).

The educational program "6B06114 Information Systems" was approved at the meeting of the Council on Academic Quality on "27" 03 2025, protocol No. 4
Chairman Baibolova L.K
S.N.P. Signature

The educational program "6B06114 Information Systems" was approved at the meeting of the Commission on Academic Quality of the Faculty on "29" 11 2024, protocol No. 2
Chairman Zheneissova G.S.
S.N.P. Signature

The educational program "6B06114 Information Systems" was developed and discussed at the meeting of the department "Information technology" dated "19" 11 2024, protocol No. 4
Head of the department
Serimbetov B.
S.N.P. Signature

Approval sheet

Educational program 6B06114- Information systems

AGREED:

Vice-Rector for Administrative Affairs		E.Askarbekov	"27" 03 2025year
Head of Educational Programs Department	PP	B.Bayadilova	"27" 03 2025year
Director of LLP 'Digital Systems Engineering'	PP	E. Zhantlessov	"19" 11 2024year
Director, Product LLP "Arta Software"Product	PP	K.Serikov	"19" 11 2024year
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Student of group AI 241		A. Demyan	"19" 11 2024year

1 Passport of the educational program

International Standard Classification of Education (ISCED) level	6
National Qualification Framework (NQF) level	6
Sectoral Qualifications Framework (SQF) level	6
Code and name of the field of education	6B06 Information and Communication technologies
Direction of training	6B061 Information and Communication technologies
Number and name of the group of educational programs	B057 Information technologies
Code and name of the educational program (EP	6B06114 Information Systems
Educational program profile	Higher education in the field of "Information and Communication Technologies"
goal of the educational program	Training of qualified specialists who possess highly effective methods of information processing, are able to apply the acquired knowledge in the field of information systems and technologies; possess practical skills and leadership qualities that meet modern quality requirements for specialists with higher education in the field of IT.
completion criterion of an educational program	240 academic credits
language of instruction of the educational program	Russian, Kazakh
Distinctive features of the educational program	no
Partner University	-

2 Qualification characteristics of a graduate of an educational program

Degree awarded	Bachelor's degree in Information and communication Technologies in the educational program "6B06114 - Information Systems"
Field of professional activity	Research, development, implementation and maintenance of information technologies and systems in various fields (industry, science, education, culture, healthcare, agriculture, construction, public administration).
Types of professional activities	Design, production and technological, organizational and managerial, operational.
Object of professional activity	Enterprises and organizations of various forms of ownership that develop, implement and operate information systems in various fields of human activity.
Functions of professional activity	Design, operation, administration, maintenance, testing, software and hardware protection of information systems.

3 Requirements for the content of the educational program

Name of cycles and disciplines	Workload in academic credits
Cycle of general education disciplines (GED)	**56**
Required component	51
University component	5
Cycle of basic disciplines (BD)	**89**
University component	25
Component of choice	62
Professional practice	2
Cycle of major disciplines (MD)	**87**
University component	15
Component of choice	55
Professional practice	17
Final assessment	**8**
Total	**240**

4 Additional educational programs (minor)

4.1 Minor «Modern aspects of AI application»

Name of disciplines	Workload in academic credits
Introduction to Artificial Intelligence	5
Development of artificial neural networks	5
Artificial intelligence in the management of object	5
Total	15

5 Competency map of the educational program «6B06114 Information Systems»

Competence map of the educational program	Learning outcome code	Learning Outcome (according to Bloom's Taxonomy)
Behavioral skills and personality traits (Softskills)	LO_{GED1}	It forms a system of general competencies that ensure the socio-cultural development of the personality of a future specialist based on his ideological, civic and moral position, oriented towards a healthy lifestyle.
	LO_{GED2}	He is capable of communication in oral and written forms in Kazakh, Russian and foreign languages to solve problems of interpersonal, intercultural and professional communication. He is capable of communication in oral and written forms in Kazakh, Russian and foreign languages to solve problems of interpersonal, intercultural and professional communication.
	LO_{GED3}	Promotes the development of information literacy through the acquisition and use of modern information and communication technologies in all fields of activity.
	LO 1	He applies knowledge of economics and law, as well as entrepreneurship and financial literacy skills in his professional

		activities, using key economic and legal principles, analyzing environmental risks and their impact on the quality of life and demonstrating civic responsibility in behavior.
	LO 2	Solves professional tasks in the field of information systems and technologies, applying the rules and methods of mathematical and natural sciences
Digital competencies (Digital skills)	LO 3	It maintains the organization's local computer system, video surveillance system, and ACS, completing the configuration, installation, configuration, and maintenance of the organization's server equipment
	LO 4	Ensures the system security of the organization, information security at the enterprise, using modern methods of information protection
	LO 5	Applies modern algorithms, methods and technologies in the design and development of software
	LO 6	It uses various platforms and programming languages
	LO 7	Provides information security of the database, analysis and configuration of performance and smooth operation of the database
Professional skills (Hardskills)	LO 8	Applies modern methods of designing and modeling software applications and information systems
	LO 9	Develops architectures of artificial intelligence systems for various subject areas based on complexes of methods and tools of artificial intelligence systems
	LO 10	Based on scientific research, he applies quantitative and qualitative methods of analysis in the work of analytical systems and robotic equipment, artificial intelligence and neural networks in making managerial decisions.

6 Learning outcomes of the educational program and modules

(The design layout is landscape)

	Learning Outcomes (LO) for the educational program	Name of module	Learning outcomes for the module	Name of disciplines that form learning outcomes
Key com-petencies	LO_{OK1} - It forms a system of general competencies that ensure the socio-cultural development of the personality of a future specialist based on his ideological, civic and moral position, oriented towards a healthy lifestyle.	Man and society are the basis of ideological and socio-political knowledge.	He applies the basic laws of the history of Kazakhstan, philosophy, socio-political knowledge for effective socialization and adaptation in changing socio-cultural conditions, forming a personality capable of mobility in the modern world, critical thinking and physical self-improvement.	History of Kazakhstan
				Philosophy
				Physical Culture
				Module of socio-political knowledge (political science, sociology, cultural studies, psychology)
	LO_{OK2} - He is capable of communication in oral and written forms in Kazakh, Russian and foreign languages to solve problems of interpersonal, intercultural and professional communication.	Information and communication module	He is able to classify software, use it for its intended purpose, structure and interpret it as needed, as well as manage software products developed by himself.	Kazakh (Russian) language
				Foreign language
	LO_{OK3} - Promotes the development of information literacy through the acquisition and use of modern information and communication technologies in all fields of activity		He is proficient in various types of information and communication technologies for the search, storage, processing, protection and dissemination of information	Information and communication technologies
	LO 1 - He applies knowledge of economics and law, as well as entrepreneurship and financial literacy skills in his professional activities, using key economic and legal principles, analyzing environmental risks and their impact on the quality of life and demonstrating civic responsibility in behavior.	Module of economic, legal, scientific and environmental knowledge	He applies knowledge of economics and law, as well as entrepreneurship and financial literacy skills in his professional activities, using key economic and legal principles, financial awareness and demonstrating civic responsibility in behavior.	Module of economics, entrepreneurship, law and financial literacy (fundamentals of economics and entrepreneurship, basics of law and anti-corruption culture, basics of financial literacy)
				Sustainable development, ecology and life safety
				Fundamentals of scientific research
	LO 2- Solves professional tasks in the field of information systems and technologies, applying the rules and methods of mathematical and natural	Mathematics and Physics	Applies fundamental concepts and laws of mathematics, methods of formalization of reasoning, performs the proof of mathematical statements, builds mathematical models, selects mathematical methods and algorithms for solving	Mathematical analysis
				Algebra and Geometry
				Discrete Mathematics for programmers
				Graph theory

	sciences		professional problems in the field of information systems and technologies.	Probability theory and mathematical statistics.
				Numerical methods
				Physics and the physical foundations of information technology
	LO 3- It maintains the organization's local computer system, video surveillance system, and ACS, completing the configuration, installation, configuration, and maintenance of the organization's server equipment	Architecture of computer systems, networks and information security.	Evaluates computer and server equipment and peripheral devices, types, technical characteristics, and their compatibility.Evaluates LAN performance, organization structure, business processes of the organization, network. equipment and principles of networking, technical conditions and standards of maintenance of server equipment. Performs troubleshooting in networks.Puts information security systems and tools in order. Draws up the organization's regulations for updating software versions and plans for preventive maintenance of the software.	Theory of electric chainsand circuit design
				Reliability of information systems
				Computer system architecture
				Design and development of information system architectures
				Operating systems
	LO 4- Ensures the system security of the organization, information security at the enterprise, using modern methods of information protection			Computer data processing systems
				Information security and information protection
				Computer networks and computer network administration
				Computer system architecture
				DevOps Basics
				Enterprise IT infrastructure management
	LO 5- Applies modern algorithms, methods and technologies in the design and development of software	Algorithmization and programming languages.	Analyzes the subject area and design and technical documentation for software development. Applies software design and development methodologies. Describes data structures and features of their implementation in one of the programming languages. Interprets modern methods of constructing and analyzing algorithms, as well as methods for evaluating their complexity. Formulates approaches to the integration of software modules and software components. Performs debugging of the software code, tests and analyzes the performance of the software source code.	Algorithms, data structures, and programming (SI)
				Basics of programming in a language Python
				Basics of Web technology
				Software development technology and standardization
	LO 6- It uses various platforms and programming languages			Object-oriented programming (Java)
				Computer organization and system programming
				Educational practice
				Fundamentals of the information system
				Modeling of information systems
				Programming of mobile applications (iOS and Android)
				Modern programming methods and tools
				Business ananlitics and digitalmarketing
				Software testing
				Web application design and development
				Information systems in industries
	LO 7- Provides information security of	Databases and	Evaluates the technical characteristics of the hardware and	Databases and DBMS

	the database, analysis and configuration of performance and smooth operation of the database	computer modeling	software complex, the features of various databases and their requirements. Selects various methods and tools for analyzing and evaluating database performance, as well as methods for effectively restoring DBMS and database performance. Coordinates the work on database administration, analyzes the need to modernize the hardware and software complex based on the results of database operation. Predicts and evaluates the risks of database failures. Analyzes possible threats to database security, adheres to the company's information security policy.	Blockchain technologies
				Big Data Processing (Big data)
	LO 8- Applies modern methods of designing and modeling software applications and information systems			Cloud databases
				Fundamentals of computer modeling
				Visual modeling
	LO 9- Develops architectures of artificial intelligence systems for various subject areas based on complexes of methods and tools of artificial intelligence systems	Software engineering and artificial intelligence	It presents the device and explains the functioning of modern intelligent systems. Formulates the theoretical foundations of the design of artificial intelligence systems. It uses traditional programming languages, special programming languages focused on symbolic information processing, logical programming languages, knowledge representation languages, integrated software environments, shells of intelligent and expert systems that allow you to create applied intelligent systems without resorting to programming.	Development of game applications on modern platforms.
				Information technology in the design of computer games
	LO 10- Based on scientific research, he applies quantitative and qualitative methods of analysis in the work of analytical systems and robotic equipment, artificial intelligence and neural networks in making managerial decisions.			Production practice 1
				Production practice 2
				Pre-graduate / (industrial) practice
				Robotics and IoT technologies
				Design of a control system
				Artificial intelligence and expert systems
				Artificial intelligence and machine learning
				Neural networks and their applications
				Development of artificial neural networks
				Engineering Computer Graphics
				Cross-platform programming
				Introduction to Artificial Intelligence
				Artificial intelligence in object management
				Smart technologies
				Business promotion on the Internet
				IT startups
				The GO programming language

7 The relationship between the attainability of the formed learning outcomes according to the educational program and academic disciplines

№	Name of the discipline	Brief description of the discipline	Number of credits	Formed learning outcomes (codes)												
				LO GEC 1	LO GEC 2	LO GEC 3	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Cycle of general education disciplines University component/Elective component																
1	Foreign language	This curriculum shall be designed to train students on general education discipline "Foreign language" as one of the compulsory subjects of general education course. The goal of the curriculum shall be the formation of intercultural communicative competence of students in the process of foreign language education at a sufficient level (A2, common European framework) and the level of basic sufficiency (B1, common European framework). Depending on the level of training, the student, at the time of completion of the course, shall reach the level B2 of common European framework of reference if the student, at the start, has the level of common European framework of reference above B1.	10		+	+										
2	Kazakh (Russian) language	This curriculum for general education discipline "Kazakh language" shall be aimed at a new format of study of language and formation of social and humanitarian outlook in the framework of the national idea of spiritual modernization. This curriculum shall be intended for development of language personality of a student capable to perform cognitive and communicative activity in the Russian language in the spheres of interpersonal, social, professional and intercultural communication in the context of implementation of the state programs of trilingualism, and spiritual modernization of the national consciousness.	10		+	+										
3	Information and communication technologies	The program is aimed at studying the updated content of the general educational discipline "Information and Communication Technologies" (hereinafter referred to as the Discipline), developing the ability to critically understand the role and significance of modern information and communication technologies in the era of digital globalization, forming a new "digital" thinking, acquiring knowledge and skills use of modern information and communication technologies in various activities.	5		+	+										

4	History of Kazakhstan	The program consists of five thematic blocks: Ancient people, the formation of nomadic civilization, Turkic civilization and the Great Steppe, Kazakhstan in a new era (XVIII - early XX centuries), Kazakhstan in the Soviet period, Independent Kazakhstan. The purpose of the discipline is to provide objective knowledge about the main stages in the development of the history of Kazakhstan from ancient times to the present.	5	+													
5	Physical Culture	This curriculum shall be aimed at the study of the general education discipline "Physical culture", providing for physical training in accordance with international standards of education. The curriculum shall determine the joint cooperation of the teacher and the student in the process of physical education throughout the training in the context of the requirements to the level of mastering of the discipline	8	+													
6	Module of socio-political knowledge (political science, sociology, cultural studies, psychology)	This curriculum shall suggest the study of four scientific disciplines – sociology, political science, cultural studies, psychology, each of which has its own subject, terminology, and research methods. The interaction between these scientific disciplines shall be based on the principles of informational complementarity; integrity; methodological integrity of the research approaches of these disciplines; the result-oriented unity of education methodology; a single system perspective of the typology of learning outcomes as the formed abilities. Within the disciplines of sociology and psychology, special attention is paid to inclusion as a key social and humanistic value. It is considered as an integral part of modern social and psychological knowledge, contributing to the formation of students' respect for social and individual diversity, recognition of human rights and principles of equality.	8	+													
7	Philosophy	This program is aimed at studying the updated content of the general education discipline "Philosophy", the formation of students' openness of consciousness, understanding of their own national code and national identity, spiritual modernization, competitiveness, realism and pragmatism, independent critical thinking, the cult of knowledge and education, the assimilation of such key worldview concepts as justice, dignity and freedom, and It is also aimed at developing and strengthening the values of tolerance, intercultural dialogue and a culture of peace.	5	+													
8	Module of economics,	Integrated discipline covers the fundamentals of economics, entrepreneurship, law and financial literacy. Examines key	5	+													

	entrepreneurship, law and financial literacy (fundamentals of economics and entrepreneurship, basics of law and anti-corruption culture, basics of financial literacy)	economic concepts, business principles, legal aspects of business and the basics of anti-corruption culture. Examines basic principles of financial planning, personal finance and investment management. Develops skills for effective economic decision-making, legal defense, building sustainable business competences and personal financial management															
Cycle of basic disciplines University component/Elective component																	
9	Basics of programming in a language Python	The discipline "Introduction to Programming (Python)" covers the basics of programming using Python. The course includes key concepts such as variables, conditional statements, loops, functions, and working with files and data collections. Students learn coding principles, algorithmization, structured programming, and the basics of using Python libraries.	5									+	+				
10	Basics of Web technology	The discipline studies the basics of Web technologies, covers the basic concepts and technologies used to develop web applications and websites. During the course, students learn the basics of studying the structure of web pages, the styling and design of web pages, students develop the fundamental knowledge and skills necessary to create modern web applications, as well as understanding the processes associated with web development.	5									+	+				
11	Algebra and Geometry	The discipline is aimed at studying matrices, linear spaces, elements of vector algebra, the structure of relations, operations with numbers and other mathematical objects, solving problems of analytical geometry. Students learn methods for solving algebraic equations and systems of equations, as well as the properties of various algebraic objects.	5					+									
12	Algorithms, data structures, and programming (SI)	The discipline is aimed at studying data structures and algorithms, data construction, arrays, search algorithms, stack, queues, one- and two-linked lists, trees, sorting, hash tables, arithmetic algorithms, graphs. Upon completion of the course, students gain the skills and knowledge necessary for data structures used at different levels of data representation, determined by the programming stages of the program.	4									+	+				
13	Mathematical	The discipline is aimed at mastering the mathematical apparatus	6					+									

	analysis	that allows you to model and solve mathematical problems. Digital circuits, differential and integral calculus of a function of one variable, indeterminate and indeterminate inherals, differential equations, series theory, master the solution of problems of a function of many variables. Students use mathematical methods to solve problems in professional activities.														
14	Physics and the physical foundations of information technology	The discipline studies the fundamental laws of physics and their application in the field of Information Technology. Includes the study of electromagnetic processes, optics, semiconductors, quantum phenomena and their role in the development of modern devices and Information Processing Systems.	5					+								
15	Fundamentals of the information system	The discipline deals with the basic concepts, components, types and areas of application of Information Systems (is), how is helps businesses, and studies the ethics and safety of IS. Forms initial knowledge and skills in the design, development and management of IS	5								+	+				
16	Modeling of information systems	The discipline studies the basics of creating software using technologies and tools provided by Microsoft.NET Framework. Application development on the platform, C# programming, principles of object-oriented programming, creation of graphical interfaces using Windows Forms and WPF, ASP.NET	5								+	+				
17	Probability theory and mathematical statistics.	The discipline is aimed at the formation of theoretical knowledge and practical skills in probability theory and Mathematical Statistics. Master the solution of problems of probability theory, elements of combinatorics, discrete random variables, statistical sets, selective equations of regression. Students use mathematical methods to solve problems in professional activities.	5					+								
18	Numerical methods	The discipline is aimed at mastering the mathematical apparatus that allows you to model and solve numerical calculation methods. Master the theoretical foundations and software tools of numerical methods of algebra, nonlinear algebraic equations, interpolation of functions, approximate calculation of integrals, methods and solving limit problems.	5					+								
19	Operating systems	The discipline is aimed at the formation of theoretical knowledge in the field of building modern operating systems, methods of organizing computing processes, methods of developing algorithms for the interaction of application programs with the operating system and mechanisms for their implementation. Studies the purpose and functions of operating systems, the architecture of operating systems, the management of processes,	5						+	+						

		threads, memory in operating systems and I/O management and file systems.															
20	Computer data processing systems	The discipline is aimed at acquiring system knowledge and practical skills in applying modern software systems for information search and systematization. Mastering the skills of using computer data processing tools and visualizing results. The course examines application software packages for data processing and analysis.	5						+	+							
21	Theory of electric chainsand circuit design	The discipline studies the basic concepts and laws of electrical circuits, the physical essence of the processes occurring in DC circuits, as well as in Electrical and electronic devices used in modern production.	5						+	+							
22	Reliability of information systems	The discipline studies the basic concepts and terms related to reliability, methods for assessing the reliability of systems to determine the importance of reliability in information systems, including stability testing, the reliability of various information systems using qualitative and quantitative methods.	5						+	+							
23	Computer networks and computer network administration	The discipline is aimed at teaching the principles of operation of computer networks and the basics of network management. The network architecture, protocols, IP addressing, data transmission methods, security measures, network devices and their configuration are considered. Learns network design, management and security skills.	4						+	+							
24	Network administration	The discipline Studies Network Systems, provides security, solves problems and optimizes performance. Students learn to manage server operating systems (e.g. Windows Server, Linux), network services (DNS, DHCP, web servers, mail servers), firewalls, routers, and other network equipment.	4						+	+							
25	Engineering Computer Graphics	The discipline is aimed at studying the main topics related to the creation and processing of graphic images used in engineering and technical fields. The main components of graphics systems, Hardware and software for working with graphics. Students master the theoretical knowledge and practical skills necessary to work with graphical systems in the mode of solving engineering problems	5													+	+
26	Cross-platform programming	The discipline studies the basic concepts and advantages, the basics of designing the architecture of cross-platform applications, the user interface, management and work with databases. The discipline provides the necessary knowledge and skills for the successful development and management of cross-platform	5													+	+

		projects. Create applications that can run on different operating systems and devices with minimal code changes.															
27	Fundamentals of computer modeling	The discipline studies methods for constructing and analyzing computer models to identify complex systems. Studies discrete, stochastic and deterministic models and uses them to model real processes. They will have modeling software that will allow them to develop and test models for analysis, optimization and forecasting in different subject areas.	5										+	+		
28	Visual modeling	The discipline studies visual programming, its advantages, the main elements of the graphical interface and their purpose. Creating interfaces for user interaction, new trends in the software development industry. Students learn various visual programming tools and can use visual programming tools in software development using visual programming tools.	5										+	+		
29	Object-oriented programming (Java)	The discipline is aimed at studying object-oriented programming, java technology, the eclipse integrated development environment, data types, variables, java language operators, creation and use of java language objects. The course builds systematic knowledge and practical skills in the use of graphical interface elements and Java packages.	5								+	+				
30	Computer organization and system programming	The discipline is aimed at studying the basics of architecture and structure of modern operating systems and system software, the structural and functional scheme of a personal computer, the purpose, types and characteristics of central and external PC devices. Upon completion of the course, students will gain the skills and knowledge necessary to apply basic management and design techniques, model-based testing and verification, and compiler construction.	5								+	+				
31	Databases and DBMS	The discipline studies the basic concepts of databases and the principles of database management systems (DBMS), data modeling, creation of SQL queries, as well as methods of data management and protection. Data design, the use of relational models and the use of modern tools are considered.	5										+	+		
32	Blockchain technologies	The discipline studies the functioning of blockchain technology, its architecture, the provision of information on various types and practical areas of application of technology, familiarization with the criteria and justifications for their effectiveness, as well as the consolidation in practice of the principles of launching pilot projects using blockchain technology	5										+	+		

33	Introduction to Artificial Intelligence	The discipline is aimed at studying the basic concepts, methods and technologies used in modern artificial intelligence systems. Looks at artificial neural networks, machine learning, deep learning, and applied algorithms and models used in various fields such as computer vision, natural language processing, robotics, and Game Art. Able to analyze and solve problems using artificial intelligence methods.	5													+	+
34	Artificial intelligence in object management	The discipline studies the basic concepts and principles of artificial intelligence systems, as well as their application in object management. Methods and technologies of artificial intelligence for effective management of objects. Upon completion of the course, students receive the skills and knowledge necessary for successful management of facilities using modern artificial intelligence technologies	5													+	+
35	Discrete Mathematics for programmers	The discipline deals with sections of discrete mathematics, set theory, combinatorics, elements of mathematical logic, logical networks and Automata, coding theory. Develops theoretical knowledge and practical skills in using personal computers and software tools to solve a wide range of tasks in various fields.	5					+									
36	Graph theory	The discipline studies the basic concepts and mathematical apparatus of graphics theory; the study of the main problems of graph theory and methods of solving them, the formation of skills in the effective use of graphical models to solve applied problems, the use of tools to create a software interface for the implementation of graphical algorithms.	5					+									
37	Computer system architecture	The discipline is aimed at studying the basics of designing and organizing computer systems, classifying the architectures of their components and the interaction between them, interacting with external devices and interfaces, and working with multitasking operating systems. They acquire skills and master the principles of operation and organization of computer components.	5						+	+							
38	Design and development of information system architectures	The course is aimed at studying the principles of designing and creating the architecture of information systems, including the choice of technologies, components and methods of their integration. Students will get acquainted with design methodologies, learn how to develop scalable, efficient and secure architectures, as well as solve problems of optimizing and ensuring the reliability of information systems	5						+	+							
39	Sustainable development,	The course is aimed at forming a systemic understanding of the principles of ensuring balance between economy, social	5				+										

	ecology and life safety	development of society, preservation of environment, protection of life and human health. Develops skills of effective management of energy and waste in the circular economy in the development of national strategies and implementation of business processes; analysis, forecasting and minimization of technological, natural and social risks; Sustainable lifestyle and responsible attitude to one's own security.															
Cycle of major disciplines University component/Elective component																	
40	Web application design and development	The discipline studies the basics of Web technologies, covers the basic concepts and technologies used to develop web applications and websites. During the discipline, students learn the basics of studying the structure of web pages, the styling and design of web pages, students develop the fundamental knowledge and skills necessary to create modern web applications, as well as understanding the processes associated with web development.	5								+	+				
41	Information systems in industries	The discipline generates knowledge about modern information systems for solving problems in the field of organizational and economic management. They study the methods of designing the functional components of the EIS. Students learn how to build information applications and the stages of computerization of management in industry.	5								+	+				
42	Programming of mobile applications (iOS and Android)	The discipline is aimed at studying the architecture of mobile platforms, programming tools and principles of mobile application design. Students learn the lifecycle of applications, creating a user interface, working with files, databases, geolocation, and telephony. The discipline provides practical skills in programming, testing and optimizing mobile applications, as well as the use of development tools.	5								+	+				
43	Modern programming methods and tools	The discipline studies the design, development, and testing of large software systems from the perspective of developer requirements. This course summarizes the knowledge gained and provides a study of modern software development technologies. Students get acquainted with the programming paradigm, with various programming methods and systems.	5								+	+				
44	Software development technology and standardization	The discipline is aimed at studying the processes, methodologies, and tools used in software development, with an emphasis on standards and quality requirements, and the stages of software product development, including planning, design, implementation,	5								+	+				

		testing, implementation, and maintenance. Students will master the creation of technical documentation, models and architecture of the system, the use of UML and other visualization tools														
45	Information security and information protection	This course is aimed at an in-depth study of the basics of information security and methods of Information Protection. The course discusses the basic principles of information security, types of threats, cryptographic methods, authentication and authorization, network security, information protection technologies	5						+	+						
46	Fundamentals of scientific research	The discipline is aimed at studying the scientific method, methods of data collection and analysis, as well as the stages of development and implementation of scientific research. The discipline forms students' competencies in the application of scientific methods and tools for information analysis, as well as develops analytical, critical thinking and the ability to scientifically study information phenomena.	5				+									
47	Robotics and IoT technologies	The discipline studies the design, development and control of robots, as well as the integration of Internet of Things devices. Students learn how sensors, actuators, and microcontrollers work, and apply their knowledge to create smart solutions in various fields.	5												+	+
48	Design of a control system	The discipline studies methods of development and implementation of systems that ensure automation and optimization of processes. Students master control algorithms, system architecture, and principles of modeling and analysis, applying the knowledge gained to create effective solutions in various fields of information technology.	5												+	+
49	Smart technologies	The discipline is aimed at studying current trends and their application in various fields, the basic principles and methods of presenting and processing information based on SMART technologies for decision-making in complex situations and managing complex systems. Students acquire the knowledge necessary for the effective use of SMART technologies in management systems.	5												+	+
50	Business promotion on the Internet	The discipline focuses on major topics such as website optimization, search engine promotion (SEO), content marketing, social media marketing (SMM), email marketing, paid advertising (PPC), web analytics, and online reputation management. The discipline is designed to increase the online presence of businesses, develop digital marketing strategies, and increase online sales.	5												+	+

51	DevOps Basics	The discipline focuses on the study of concept and practices related to DevOps - a culture and set of principles that bring together Development and operations teams to improve software development, testing and deployment processes. During their training, students will master the basic tools and technologies used in DevOps, including version control systems, Assembly and deployment automation, containerization and orchestration, and Performance Control and management.	5						+	+						
52	Enterprise IT infrastructure management	The discipline teaches mastering the skills of managing the IT infrastructure of an enterprise and studying modern technologies, methods and tools used to optimize the work of the IT department, using the knowledge gained during the implementation of projects for the development of Information Systems in various sectors of the economy.	5						+	+						
53	Neural networks and their applications	Artificial neural networks. The architecture of artificial neural networks. A set of tools for creating, initializing, training, modeling, and visualizing a network. Methods and algorithms for training artificial neural networks. Gradient learning algorithms. Algorithms based on the conjugate gradient method.	5													+	+
54	Development of artificial neural networks	The discipline focuses on the study of methods for creating and training neural networks, which are mathematical models that mimic the work of the human brain. During the course of studying this discipline, students will learn about various types of neural networks, their structures and learning algorithms. Upon completion of the course, students will be able to create, train and apply neural networks to solve various tasks in the field of artificial intelligence and machine learning.	5													+	+
55	Software testing	The discipline focuses on the study of modern testing methods, tools, and strategies, including systems with artificial intelligence and embedded technologies. Students master the knowledge and skills of analyzing, testing, and ensuring the quality of software systems, testing intelligent systems in complex environments, as well as validating and verifying solutions.	5								+	+					
56	Business ananlitics and digitalmarketing	The discipline is aimed at studying the formation of students' knowledge, skills and competencies necessary for the organization of effective activities, as well as the promotion of companies and products on the Internet, a systematic presentation of the modern concept of Digital marketing in professional activities. The knowledge gained as a result of mastering the discipline is used in developing a Digital marketing strategy and choosing	5								+	+					

		communication channels.														
57	Big Data Processing (Big data)	The discipline is aimed at studying the basics of working with big data, methods of their analysis, tools and technologies used in this field. The concept of big data, its characteristics, statistical methods, machine learning methods, data processing and visualization. The knowledge gained as a result of mastering the discipline will help you understand the concepts and technologies related to big data, which are used for data processing and analysis.	5										+	+		
58	Cloud databases	The discipline is aimed at studying the technology, methods of data storage, management and processing in cloud computing. The focus is on various cloud database models, deployment methods, architecture, and security. Students master cloud application development technologies, distributed systems, and the concept of cloud systems.	5										+	+		
59	Development of game applications on modern platforms	The discipline is aimed at studying the principles of game programming, working with graphics, animation, as well as mastering methods for optimizing and publishing games, which will allow you to create your own projects and work in the gaming industry. Students learn the basic principles, creating game graphics, sound design, programming game mechanics and ensuring the user-friendliness of the game with a user interface.	5												+	+
60	Information technology in the design of computer games	The discipline is aimed at developing students" professional skills in designing digital interfaces for interacting with users and involving them in a product, developing technical and aesthetic ideas about tools and methods for designing gaming and interactive applications, and mastering basic prototyping techniques for art games, physical games, and meta-games.	5												+	+
61	IT startups	The discipline studies key aspects of the creation and management of startups, the processes of creation, development and management of new companies in the field of information technology, the stages from the formation of startup ideas to attracting financing, product development, market promotion and development of growth strategies. Students learn important aspects such as creating a startup business model, developing marketing strategies, managing a team, attracting investments, and managing risks	5												+	+
62	The GO programming language	The discipline is aimed at studying the installation of Go on various operating systems, setting up the work environment and tools, defining and using functions, parameters and return values.	5												+	+

		Creating and working with packages. Students learn how to create and organize projects using packages and modules.															
63	Artificial intelligence and expert systems	The discipline studies the basic concepts and methods used in the field of artificial intelligence (AI), as well as the process of developing and applying expert systems, neural networks and deep learning. Students master machine learning, data processing, and expert system development algorithms, using the knowledge gained to solve complex problems in various fields, including analysis and forecasting.	5													+	+
64	Artificial intelligence and machine learning	The discipline studies methods and algorithms that enable systems to learn and make decisions based on data. Students study the theory and practice of machine learning, including regression, classification, and clustering, using this knowledge to develop intelligent applications.	5													+	+
Minor																	
1	Introduction to Artificial Intelligence	The discipline is aimed at studying the basic concepts and methods of intelligence, with basic algorithms of machine learning, deep learning, neural networks, and heuristic methods of artificial intelligence. The discipline forms basic knowledge in the field of artificial intelligence, the ability to analyze and solve problems using artificial intelligence methods.	5													+	+
2	Development of artificial neural networks	The discipline focuses on the study of methods for creating and training neural networks, which are mathematical models that mimic the work of the human brain. During the course of studying this discipline, students will learn about various types of neural networks, their structures and learning algorithms. Upon completion of the course, students will be able to create, train and apply neural networks to solve various tasks in the field of artificial intelligence and machine learning.	5													+	+
3	Artificial intelligence in object management	The discipline studies the basic concepts and principles of artificial intelligence systems, as well as their application in object management. Methods and technologies of artificial intelligence for effective management of objects. Upon completion of the course, students receive the skills and knowledge necessary for successful management of facilities using modern artificial intelligence technologies.	5													+	+

8 Alignment of planned learning outcomes with assessment technologies and teaching methods within the module

Learning Outcomes (LO) Number	Planned learning outcomes for the module	Assessment technologies (tools)	Methods of learning and teaching
LO1	He applies knowledge of economics and law, as well as entrepreneurship and financial literacy skills in his professional activities, using key economic and legal principles, analyzing environmental risks and their impact on the quality of life and demonstrating civic responsibility in behavior.	Interactive lecture, inverted class discussion.	Test, presentation, essay, assignment
LO2	Solves professional tasks in the field of information systems and technologies, applying the rules and methods of mathematical and natural sciences	System analysis, simulation modeling methods, mathematical modeling methods, geometric transformation method.	Performance of control tasks, development of simulation models, Presentation, test tasks
LO3	It maintains the organization's local computer system, video surveillance system, and ACS, completing the configuration, installation, configuration, and maintenance of the organization's server equipment	Interactive lecture, discussion, demonstration method, practical teaching method, group work.	Presentation, test tasks, Project preparation, model building.
LO4	Ensures the system security of the organization, information security at the enterprise, using modern methods of information protection	Interactive lecture, demonstration method, practical teaching method, group work, practical tasks and case studies.	Presentation, test tasks, research work. Creative work, independent work, control work.
LO5	Applies modern algorithms, methods and technologies in the design and development of software	Interactive lecture, demonstration method, practical teaching method, group work, practical tasks and case studies.	Test, control tasks, software product/project. Analysis of specific situations, problem solving
LO6	It uses various platforms and programming languages	Methods of analogy, measurement, control, visualization, practical tasks and cases	Software product/project, Test control, Written control, Calculation and graphical task. Analyzing specific situations and solving problems.
LO7	Provides information security of the database, analysis and configuration of performance and smooth operation of the database	Interactive lecture, demonstration method, practical teaching method, group work	Calculation and graphical task, project preparation, problem solving, test, Software

			product/project.
LO8	Applies modern methods of designing and modeling software applications and information systems	Using virtual application programs for system design and calculation	cellular control, computational and graphical task, Software product/project. Analysis of specific situations, problem solving
LO9	Develops architectures of artificial intelligence systems for various subject areas based on complexes of methods and tools of artificial intelligence systems	Interactive lecture, demonstration method, practical teaching method, group work.	Test control, calculation and graphical task, software product/project.
LO10	Based on scientific research, he applies quantitative and qualitative methods of analysis in the work of analytical systems and robotic equipment, artificial intelligence and neural networks in making managerial decisions.	The use of virtual application programs for the design and calculation of systems.	Test control, calculation and graphical task, Software product/project

9 Correlation of learning outcomes of the educational program with the labor functions of professional standards (if any)

Name of the professional standards used	Professions at level 6 and/or 7 of the SQF	Labor functions	Tasks	Learning outcomes for the educational program
Database administration	Database Administration Specialist (System Administrator)	LF1. Software installation and configuration	Professional scientists do not provide tasks.	
		LF2. Ensuring the smooth operation of the DBMS.		LO5
		LF3. Providing information security of the database		LO5
System and network administration	System Administrator	LF1. Organization's LAN design, installation, and maintenance		LO3
		LF2. Ensuring the organization's system security		LO3
Software development	Software Designer	LF1. Software design		LO4, LO6
		LF2. Analysis of software requirements		LO4
		LF3. Software programming and testing		LO6
Personal competence requirements:	Responsibility Discipline Initiative Organization Attentiveness Sense of duty Decision making Critical analysis Result orientation Striving for professional development			

10 Graduate model

GRADUATE MODEL			
Professional standard Database administration, System and Network administration, Software development	Competencies (soft skills, digital skills)		
	Attributes of a graduate	knowledge	Skills
	- Deep understanding of IP architecture - Database management skills - Knowledge of network technologies - Programming and software development skills - Understanding the principles of information security - Adaptability and continuous learning - Critical thinking	- The composition of the hardware and software complex used and the characteristics of its components. - Functionality of the installed software, including the OS. - Requirements for the installed software. - Methods of setting up and configuring system and application software. - Tools and methods for managing database user accounts. - Methods of ensuring database security when using the software. - Antivirus programs.	- Planning the installation of system software. - The use of tools and methods to control access to the database. -Carrying out minor repairs of computer, server equipment and peripheral devices of the organization. -Preparation of requests for repair of faulty computer, server equipment and peripheral devices of the organization. -Ensuring timely copying, archiving and backup of data. -Organization and provision of uninterrupted operation of networks (local area networks, workstations, software, computer, server equipment and peripheral devices). -Ensuring system security (protection against unauthorized access, viewing and modification of system files and data). - Formation of accounting documentation based on the results of the work carried out.
	Professional skills (hard skills)		
	Specify specific requirements for the level of qualifications and competence -Defines the essence and content of the processes of management, management, entrepreneurship and management; - Has the ability to establish communication and decision-making processes; has the ability to choose an effective leadership style and leadership, methods of managing groups, conflicts, and stress; -Possesses communication skills to communicate with colleagues and customers in the process of project development, as well as participates in the organization and management of projects -Calculates and prepares a business plan and project analysis of an investment and business project - Applies regulations for managing the processes of the IT infrastructure lifecycle and the activities of IT enterprises		

Типтік оқу жоспары/ Типичный учебный план/ Typical curriculum
6B06114 - Ақпараттық жүйелер / 6B06114 - Информационные системы / 6B06114 - Information Systems

Модульдің № / № модуля / Module №	Пәндердің № / № дисциплины / Discipline №	ОҚУ ПӘНДЕРІНІҢ АТАУЫ НАИМЕНОВАНИЕ УЧЕБНЫХ ДИСЦИПЛИН NAME OF TEACHING DISCIPLINES	Оқу пәндерінің циклы (міндетті компонент / таңдау компоненті) Цикл учебных дисциплин (обязательный компонент / компонент по выбору) Educational disciplines cycle (compulsory component / component of choice)	Оқу пәндерінің коды Код учебной дисциплины Educational discipline code	Семестр / semester	Кредиттер саны Количество кредитов Number of credits	Курстық жұмыс (жоба) Курсовая работа (проект) Course work (project)	Барлық сағат / Всего часов / Total hours	Барлық аудит сағат Всего аудит часов Total classroom hours	Д / ЛК / Lec	СПС / СПЗ / SPL	ЛС / ЛЗ / LC	ОБӨЖ / СРОП / IWST	БАӨЖ / СРО / IWS	1 КУРС / YEAR: 1 Академиялық кезең / Академический период / Academic period (15)	1 КУРС / YEAR: 2 Академиялық кезең / Академический период / Academic period (15)	2 КУРС / YEAR: 3 Академиялық кезең / Академический период / Academic period (15)	2 КУРС / YEAR: 4 Академиялық кезең / Академический период / Academic period (15)	3 КУРС / YEAR: 5 Академиялық кезең / Академический период / Academic period (15)	3 КУРС / YEAR: 6 Академиялық кезең / Академический период / Academic period (15)	4 КУРС / YEAR: 7 Академиялық кезең / Академический период / Academic period (15)	4 КУРС / YEAR: 8 Академиялық кезең / Академический период / Academic period (15)	Оқыту тілі (үш тілде білім беру бағдарламасы бойынша, оқыту тілінде, екінші тілде, ағылшын тілінде) / Язык обучения (для программы трехъязычного образования: на языке обучения, на втором языке, на английском языке) / Language of education (for trilingual education programs: in the language learning in the second language, in English)
								Білім алушылардың жұмыс уақытының бюджеті сағатпен / Бюджет рабочего времени (час) / Budget of working time (hours)	Аудиториялық жұмыс / Аудиторная работа / Class work	оның ішінде / в том числе / including					Семестр бойынша бөлу / Распределение по семестрам / Distribytion of semesters. Семестрдағы апталар саны / Недель в семестре / Weeks in a semester; аптасына аудиториялық сағат / аудиторных часов в неделю / classroom hours per week								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Ақпараттық-коммуникациялық модуль / Информационно- коммуникационный модуль / Information and communication module																						
Модуль / Module № 1	1	Қазақ (Орыс) тілі Казахский (Русский) язык Kazakh (Russian) language	ЖБП (МК) ООД (ОК) GER (CS)	K(R)Ya 1105-25 (1) K(R)Ya 1105-25 (1) K(R)Ya 1105-25 (1)	1	5		150	45		45		15	90	0 + 3 + 0								Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Шетел тілі Иностранный язык Foreign language	ЖБП (МК) ООД (ОК) GER (CS)	IYa 1104-25 (1) IYa 1104-25 (1) IYa 1104-25 (1)	1	5		150	45		45		15	90	0 + 3 + 0								Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	3	Қазақ (Орыс) тілі Казахский (Русский) язык Kazakh (Russian) language	ЖБП (МК) ООД (ОК) GER (CS)	K(R)Ya 1105-25 (2) K(R)Ya 1105-25 (2) K(R)Ya 1105-25 (2)	2	5		150	45		45		15	90		0 + 3 + 0							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	4	Ақпараттық-коммуникациялық технологиялар Информационно-коммуникационные технологии Information and communication technologies	ЖБП (МК) ООД (ОК) GER (CS)	IKT 1108-25 IKT 1108-25 IKT 1108-25	2	5		150	45	15		30	15	90		1 + 0 + 2							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	5	Шетел тілі Иностранный язык Foreign language	ЖБП (МК) ООД (ОК) GER (CS)	IYa 1104-25 (2) IYa 1104-25 (2) IYa 1104-25 (2)	2	5		150	45		45		15	90		0 + 3 + 0							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
Барлығы модуль бойынша / Итого по модулю / Total for module						**25**		**750**	**225**	**15**	**180**	**30**	**75**	**450**									
	Адам мен қоғам-дүниетанымдық және әлеуметтік-саяси білімнің негізі / Человек и общество- основа мировоззренческих и социально- политических знаний / Man and society are the basis of ideological and socio-political knowledge																						
Модуль / Module № 2	1	Қазақстан тарихы История Казахстана History of Kazakhstan	ЖБП (МК) ООД (ОК) GER (CS)	IK 1101-25 IK 1101-25 IK 1101-25	1	5		150	45	30	15		15	90	2 + 1 + 0								Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GER (CS)	PhK 1106-25 (1) PhK 1106-25 (1) PhK 1106-25 (1)	1	2		60	30		30			30	0 + 2 + 0								Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	3	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GER (CS)	PhK 1106-25 (2) PhK 1106-25 (2) PhK 1106-25 (2)	2	2		60	30		30			30		0 + 2 + 0							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	4	Әлеуметтік-саясаттану білім модулі (әлеуметтану, саясаттану, мәдениеттану, психология) Модуль социально-политических знаний (политология, социология, культурология, психология) Module of socio-political knowledge (political science, sociology, cultural studies, psychology)	ЖБП (МК) ООД (ОК) GER (CS)	MSPZ 2103-25 MSPZ 2103-25 MSPZ 2103-25	3	8		240	120	60	60		15	105			4 + 4 + 0						Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	5	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GER (CS)	PhK 1106-25(3) PhK 1106-25(3) PhK 1106-25(3)	3	2		60	30		30			30			0 + 2 + 0						Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	6	Дене шынықтыру Физическая культура Physical Culture	ЖБП (МК) ООД (ОК) GER (CS)	PhK 1106-25(4) PhK 1106-25(4) PhK 1106-25(4)	4	2		60	30		30			30				0 + 2 + 0					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	7	Философия Философия Philosophy	ЖБП (МК) ООД (ОК) GER (CS)	Fil 2102-25 Fil 2102-25 Fil 2102-25	4	5		150	45	30	15		15	90				2 + 1 + 0					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
Барлығы модуль бойынша / Итого по модулю / Total for module						**26**		**780**	**330**	**120**	**210**	**0**	**45**	**405**									
	Экономикалық-құқықтық, ғылыми және экологиялық білім модулі / Модуль экономико-правовых, научных и экологических знаний / Module of economic, legal, scientific and environmental knowledge																						
Модуль / Module № 3	1	Экономика, кәсіпкерлік, құқық және қаржылық сауаттылық модулі (экономика және кәсіпкерліктің негіздері, құқық негіздері және сыбайлас жемқорлыққа қарсы мәдениет, қаржылық сауаттылық негіздері) Модуль экономики, предпринимательства, права и финансовой грамотности (основы экономики и предпринимательства, основы права и антикоррупционная культура, основы финансовой грамотности) Module of economics, entrepreneurship, law and financial literacy (fundamentals of economics and entrepreneurship, basics of law and anti-corruption culture, basics of financial literacy)	ЖБП (ЖК) ООД (ВК) GER (UC)	MEPPFG 1107-25 MEPPFG 1107-25 MEPPFG 1107-25	2	5		150	45	30	15		15	90		2 + 1 + 0							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Тұрақты даму, экология және тіршілік қауіпсіздігі Устойчивое развитие, экология и безопасность жизнедеятельности Sustainable development, ecology and life safety	БП (ЖК) БД (ВК) BS (UC)	UREBZh 3207-25 UREBZh 3207-25 UREBZh 3207-25	6	5		150	45	15	30		15	90						1 + 2 + 0			Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	3	Ғылыми зерттеулердің негіздері Основы научных исследований Fundamentals of scientific research	БеП (ЖК) ПД (ВК) AS (UC)	ONI 4328-25 ONI 4328-25 ONI 4328-25	6	5		150	45	15	30		15	90						1 + 2 + 0			Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
Барлығы модуль бойынша / Итого по модулю / Total for module						**15**		**450**	**135**	**60**	**75**	**0**	**45**	**270**									
	Алгоритмдеу және бағдарламалау тілдері / Алгоритмизация и языки программирования / Algorithmization and programming languages																						
	1	Алгоритмдер, мәліметтер құрылымы және бағдарламалау (СИ) Алгоритмы, структуры данных и программирование (СИ) Algorithms, data structures, and programming (SI)	БП (ЖК) БД (ВК) BS (UC)	ASDiP 1204-25 ASDiP 1204-25 ASDiP 1204-25	1	4		120	45	15		30	15	60	1 + 0 + 2								Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Web технология негіздері Основы Web технологий Basics of Web technology	БП (ТК) БД (КВ) BS (ES)	OWT 1202-25 OWT 1202-25 OWT 1202-25	1	4		120	45	15		30	15	60	1 + 0 + 2								Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	3	Python тілінде бағдарламалаудың негіздері Основы программирования на языке Python Basics of programming in a language Python		OPYAP 1202-25 OPYAP 1202-25 OPYAP 1202-25																			
	4	Оқу практика Учебная практика Educational practice	БП (ЖК) БД (ВК) BS (UC)	UP 25 (1) UP 25 (1) UP 25 (1)	2	2		60	0							2 апта / недель / weeks							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option

Модуль / Module № 4	5	Ақпараттық жүйелер негіздері Основы информационных систем Fundamentals of the information system	БП (ТК) ҚД (КВ) BS (ES)	OIS 2209-25 OIS 2209-25 OIS 2209-25	3	5		150	45	15		30	15	90			1 + 0 + 2							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	6	Платформа кәсіпорынды әзірлеу MS.NET Framework Разработка приложений на платформе MS.NET Framework Modeling of information systems		RPPMNF 2209-25 RPPMNF 2209-25 RPPMNF 2209-25																			
	7	Компьютерлік ұйымдастыру және жүйелік бағдарламалау Организация компьютера и системное программирование Computer organization and system programming	БП (ТК) ҚД (КВ) BS (ES)	OKiSP 3214-25 OKiSP 3214-25 OKiSP 3214-25	5	5		150	45	15		30	15	90					1 + 0 + 2					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	8	Объектіге бағытталған бағдарламалау (Java) Объектно-ориентированное программирование (Java) Object-oriented programming (Java)		OOP 3214-25 OOP 3214-25 OOP 3214-25																			
	9	Мобильді қосымшаларды бағдарламалау (iOS және Android) Программирование мобильных приложений (iOS и Android) Development of mobile applications (iOS and Android)	БП (ТК) ПД (КВ) AS (ES)	PMP 3320-25 PMP 3320-25 PMP 3320-25	5	5		150	45	15		30	15	90					1 + 0 + 2					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	10	Бағдарламалаудың заманауи әдістері мен құралдары Современные методы и средства программирования Modern programming methods and tools		SMiSP 3320-25 SMiSP 3320-25 SMiSP 3320-25																			
	11	ҚА әзірлеу технологиясы және стандарттау Технология разработки и стандартизация ПО Software development technology and standardization	БП (ТК) ПД (КВ) AS (UC)	TRSPO 3321-25 TRSPO 3321-25 TRSPO 3321-25	6	5		150	45	15		30	15	90						1 + 0 + 2				Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	12	Салалардағы ақпараттық жүйелер Информационные системы в отраслях Information systems in industries	БП (ТК) ПД (КВ) AS (ES)	ISIO 3319-25 ISIO 3319-25 ISIO 3319-25	6	5		150	45	15		30	15	90						1 + 0 + 2				Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	13	Web қосымшаларын жобалау және әзірлеу Проектирование и разработка Web-приложений Web application design and development		PiRWP 3319-25 PiRWP 3319-25 PiRWP 3319-25																			
	14	Бағдарламалық жасақтаманы тестілеу Тестирование программного обеспечения Software testing	БП (ТК) ПД (КВ) AS (ES)	TPO 4332-25 TPO 4332-25 TPO 4332-25	7	5		150	45	15		30	15	90							1 + 0 + 2			Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	15	Іскерлік аналитика және digitalmarketing Бизнес - аналитика и digital marketing Business analytics and digitalmarketing		BAiDM 4332-25 BAiDM 4332-25 BAiDM 4332-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module					**40**			**1200**	**360**	**120**	**0**	**240**	**120**	**660**												
Модуль / Module № 5		**Математика және физика / Математика и физика / Mathematics and Physics**																								
	1	Алгебра және геометрия Алгебра и геометрия Algebra and Geometry	БП (ЖК) БД (ВК) BS (UC)	AG 1203-25 AG 1203-25 AG 1203-25	1	5		150	45	15	30		15	90	1 + 2 + 0									Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Математикалық талдау Математический анализ Mathematical analysis	БП (ЖК) БД (ВК) BS (UC)	MA 1205-25 MA 1205-25 MA 1205-25	2	6		180	60	30	30		15	105		2 + 2 + 0							Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	3	Ақпараттық технологиялардың физикалық және физикалық негіздері Физика и физические основы информационных технологий Physics and the physical foundations of information technology	БП (ЖК) БД (ВК) BS (UC)	FFOIT 2207-25 FFOIT 2207-25 FFOIT 2207 -25	3	5		150	45	15	15	15	15	90			1 + 1 + 1						Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	4	Ықтималдықтар теориясы және математикалық статистика Теория вероятностей и математическая статистика Probability theory and mathematical statistics	БП (ТК) БД (ЦВ) BS (ES)	TVMC 2206-25 TVMC 2206-25 TVMC 2206-25	3	5		150	45	15	30		15	90			1 + 2 + 0						Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	5	Сандық әдістер Численные методы Numerical methods		CMM 2206-25 CMM 2206-25 CMM 2206-25																			
	6	Графтар теориясы Теория графов Graph theory	БП (ТК) ҚД (КВ) BS (ES)	TG 3217-25 TG 3217-25 TG 3217-25	5	5		150	45	15	30		15	90					1 + 2 + 0				Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	7	Бағдарламалаушылар үшін дискретті математика Дискретная математика для программистов Discrete Mathematics for programmers		DMiP 3217-25 DMiP 3217-25 DMiP 3217-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module					**26**			**780**	**240**	**90**	**135**	**15**	**75**	**465**												
Модуль / Module № 6		**Компьютерлік жүйелер мен желілердің архитектурасы және ақпараттық қауіпсіздік / Архитектура компьютерных систем и сетей и информационная безопасность / Architecture of computer systems and networks and information security**																								
	1	Операциялық жүйелер Операционные системы Operating systems	БП (ТК) ҚД (КВ) BS (ES)	OS 2206-25 OS 2206-25 OS 2206-25	3	5		150	45	15		30	15	90			1 + 0 + 2						Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Компьютерлік деректерді өңдеу жүйелері Компьютерные системы обработки данных Computer data processing systems		KSOD 2208-25 KSOD 2208-25 KSOD 2208-25																			
	3	Электр тізбектерінің теориясы және сәйкестенуі Теория электрических цепей и схемотехники Theory of electric circuits and circuit design	БП (ТК) ҚД (КВ) BS (ES)	TECS 2211 -25 TECS 2211 -25 TECS 2211 -25	4	5		150	45	15		30	15	90				1 + 0 + 2					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	4	Ақпараттық жүйелердің сенімділігі Надежность информационных систем Reliability of information systems		NIS 2211-25 NIS 2211-25 NIS 2211-25																			
	5	Компьютерлік желілер және желілерді әкімшілендіру Компьютерные сети и администрирование компьютерных сетей Computer networks and computer network administration	БП (ТК) ҚД (КВ) BS (ES)	KSAKS 2212-25 KSAKS 2212-25 KSAKS 2212-25	4	4		120	45	15		30	15	60				1 + 0 + 2					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	6	Желіні әкімшілендіру Сетевое администрирование Network administration		SA 2212-25 SA 2212-25 SA 2212-25																			
	7	Компьютерлік жүйелердің сәулеті Архитектура компьютерных систем Computer system architecture	БП (ТК) ҚД (КВ) BS (ES)	AKS 3218-25 AKS 3218-25 AKS 3218-25	5	5		150	45	15		30	15	90					1 + 0 + 2				Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	8	Ақпараттық жүйелердің архитектурасын жобалау және әзірлеу Проектирование и разработка архитектур информационных систем Design and development of information system architectures		PiRAIS 3218-25 PiRAIS 3218-25 PiRAIS 3218-25																			
	9	Дипломалдындағы практика/Өндірістік практика Преддипломная практика/Производственная практика Pre-graduate practice/Industrial practice	БП (ЖК) БД (ВК) BS (UC)	PDP/PP 25 (IS) PDP/PP 25 (IS) PDP/PP 25 (IS)	8	7		210	0												7 апта / модель / weeks			Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	10	Ақпараттық қауіпсіздік және ақпарат құқығы Информационная безопасность и защита информации Information security and information protection	БП (ЖК) ПД (ВК) AS (UC)	IBiZI 3322-25 IBiZI 3322-25 IBiZI 3322-25	6	5		150	45	15		30	15	90						1 + 0 + 2			Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	11	DevOps негіздері Основы DevOps DevOps Basics	БП (ТК) ПД (КВ) AS (ES)	ODO 4326-25 ODO 4326-25 ODO 4326-25	7	5		150	45	15		30	15	90							1 + 0 + 2		Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	12	Кәсіпорынның IT инфрақұрылымын басқару Управление IT инфраструктурой предприятия Enterprise IT infrastructure management		UITP 4326 -25 UITP 4326 -25 UITP 4326 -25																			
Барлығы модуль бойынша / Итого по модулю / Total for module					**36**			**1980**	**270**	**90**	**0**	**180**	**90**	**510**												
		Databases and computer modeling / Базы данных и компьютерное моделирование / Мәліметтер базасы және компьютерлік модельдеу																								
	1	Өндірістік практика 1 Производственная практика 1 Production practice 1	БП (ЖК) БД (ВК) BS (UC)	PP 1- 25 (IS) PP 1- 25 (IS) PP 1- 25 (IS)	4	5		150	0									5 апта / модель / weeks						Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option

Модуль / Module № 7	2	Визуалды моделдеу Визуальное моделирование Visual modeling	БП (ТК) БД (КВ) BS (ES)	BM 2213 -25 BM 2213 -25 BM 2213 -25	4	5		150	45	15		30	15	90				1 + 0 + 2					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	3	Компьютерлік модельдеу негіздері Основы компьютерного моделирования Fundamentals of computer modeling		OKM 2213 -25 OKM 2213 -25 OKM 2213 -25																			
	4	Blockchain технологиясы Технологии Blockchain Blockchain technologies	БП (ТК) БД (КВ) BS (ES)	TB 3215 -25 TB 3215 -25 TB 3215 -25	5	5		150	45	15		30	15	90					1 + 0 + 2				Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	5	Деректер базасы және ДБЖБ Базы данных и СУБД Databases and DBMS		BDbSUBD 3215-25 BDbSUBD 3215-25 BDbSUBD 3215-25																			
	6	Бұлттық мәліметтер базасы Облачные базы данных Cloud databases	БеП (ТК) ШД (КВ) AS (ES)	OBD 4332 -25 OBD 4332 -25 OBD 4332 -25	7	5		150	45	15		30	15	90							1 + 0 + 2		Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	7	Үлкен деректерді өңдеу (Big Data) Обработка больших данных (Big data) Big Data Processing (Big data)		OBD BD 4331-25 OBD BD 4331-25 OBD BD 4331-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						20		600	135	45	0	90	45	270										
Модуль / Module № 8	Бағдарламалық жасақтама және жасанды интеллект / Программная инженерия и искусственные интеллект. / Software engineering and artificial intelligence.																							
	1	Инженерлік және компьютерлік графика Инженерная и компьютерная графика Engineering Computer Graphics	БП (ТК) БД (КВ) BS (ES)	IKG 2210-25 IKG 2210-25 IKG 2210-25	4	4		120	45	15		30	15	60				1 + 0 + 2					Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	2	Кросс-платформалық бағдарламалау Кросс-платформенное программирование Cross-platform programming		KPP 2210-25 KPP 2210-25 KPP 2210-25																			
	3	Объектілерді басқарудағы жасанды интеллект Искусственный интеллект в управлении объектами Artificial intelligence in object management	БП (ТК) БД (КВ) BS (ES)	IIUO 3216-25 IIUO 3216-25 IIUO 3216-25	5	5		150	45	15		30	15	90					1 + 0 + 2				Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	4	Жасанды интеллектке кіріспе Введение в искусственные интеллект Introduction to Artificial Intelligence		III 3216-25 III 3216-25 III 3216-25																			
	5	Өндірістік тәжірибе 2 Производственная практика 2 Production practice 2	ШІ (ЖК) ШД (БК) BS (UC)	PP 2- 25 (IS) PP 2- 25 (IS) PP 2- 25 (IS)	6	5		150	0											5 апта / неделя / weeks			Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	6	Робототехника және IoT- технологиялар Робототехника и IoT - технологий Robotics and IoT technologies	БеП (ТК) ШД (КВ) AS (ES)	RIoTT 4324-25 RIoTT 4324-25 RIoTT 4324-25	7	5		150	45	15		30	15	90							1 + 0 + 2		Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	7	Басқару жүйелерін жобалау Проектирование систем управления Design of a control system		PSU 4324-25 PSU 4324-25 PSU 4324-25																			
	8	Нейрондық желілер және олардың қолданылулары Нейронные сети и их приложения Neural networks and their applications	БеП (ТК) ШД (КВ) AS (ES)	NSIP 4323-25 NSIP 4323-25 NSIP 4323-25	7	5		150	45	15		30	15	90							1 + 0 + 2		Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	9	Жасанды нейрондық желілерді әзірлеу Разработка искусственных нейронных сетей Development of artificial neural networks		RINS 3216-25 RINS 3216-25 RINS 3216-25																			
	10	Интернетте бизнесті жылжыту Продвижение бизнеса в Интернет Business promotion on the Internet	БеП (ТК) ШД (КВ) AS (ES)	PBI 4325-25 PBI 4325-25 PBI 4325-25	7	5		150	45	15		30	15	90							1 + 0 + 2		Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	11	Smart технологиялар Smart технологии Smart technologies		ST 4325 -25 ST 4325 -25 ST 4325 -25																			
	12	GO бағдарламалау тілі Язык программирование GO The GO programming language	БеП (ТК) ШД (КВ) AS (ES)	YaPGO 4329-25 YaPGO 4329-25 YaPGO 4329-25	8	5		150	45	15		30	15	90								1 + 0 + 2	Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	13	IT саласындағы стартаптар Стартапы в сфере IT IT startups		SSIT 4331-25 SSIT 4331-25 SSIT 4331-25																			
	14	Компьютерлік ойындар дизайнындағы ақпараттық технологиялар Информационные технологии в дизайне компьютерных игр Information technology in the design of computer games	БеП (ТК) ШД (КВ) AS (ES)	ITDKI 4330-25 ITDKI 4330-25 ITDKI 4330-25	8	5		150	45	15		30	15	90								1 + 0 + 2	Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	15	Заманауи платформаларда ойын қосымшаларын әзірлеу Разработка игровых приложений на современных платформах Development of game applications on modern platforms		RDSP 4330-25 RDSP 4330-25 RDSP 4330-25																			
	16	Жасанды интеллект және машиналық оқыту Искусственный интеллект и машинное обучение Artificial intelligence and machine learning	БеП (ТК) ШД (КВ) AS (ES)	IIMO 3323-25 IIMO 3323-25 IIMO 3323-25	8	5		150	45	15		30	15	90								1 + 0 + 2	Білім алушының таңдауы бойынша/ По выбору обучающегося/ By student's option
	17	Жасанды интеллект және сарапшылық жүйелер Искусственный интеллект и экспертные системы Artificial intelligence and expert systems		IIES 3323-25 IIES 3323-25 IIES 3323-25																			
Барлығы модуль бойынша / Итого по модулю / Total for module						44		1320	360	120	0	240	120	690										
Модуль / Module № 9	Қорытынды аттестация / Итоговая аттестация / Final assessment																							
	1	Қорытынды аттестаттау Итоговая аттестация Final assessment			8	8		240														6 апта / неделя / weeks	
Барлығы модуль бойынша / Итого по модулю / Total for module						8		240	0	0	0	0	0	0										
БАРЛЫҒЫ МОДУЛЬДАР БОЙЫНША / ИТОГО ПО МОДУЛЯМ / TOTAL FOR MODULES						240		7200	2055	660	600	795	615	3720										

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 6В06114 - «Информационные системы»
АО «Казахский университет технологии и бизнеса»

Образовательная программа (далее ОП) 6В06114 - «Информационные системы», реализуемая в АО «Казахский университет технологии и бизнеса» (бакалавриат), представляет собой систему учебно-методических документов, регламентирующих цели, ожидаемые результаты, содержание, условия и технологии реализации образовательного процесса, систему оценки качества подготовки выпускника и соответствует нормативно-правовым актам МОН РК.

ОП разработана и утверждена на основании требований Государственных общеобязательных стандартов высшего и послевузовского образования (Приказ МОН РК от 31.10. 2018 г. № 604, Приложение 5).

Целью ОП 6В06114- «Информационные системы» (бакалавриат) подготовка квалифицированных специалистов, направленных на успешную работу выпускников в качестве ИТ-специалистов в различных организациях, разработку и внедрение инновационных решений, а также содействие развитию информационных технологий в стране.

Образовательная программа 6В06114 - "Информационные системы" предназначена для передачи обучающимся как базовых знаний, так и передовых навыков, необходимых для достижения успеха в этой области. Образовательная программа охватывает широкий круг тем, начиная с основных понятий. Подробно рассматриваются основные предметы и практические навыки.

Реализация образовательной программы обеспечивается квалифицированными педагогическими кадрами, занимающимися научной и научно-методической деятельностью.

Описание и оценка структуры образовательной программы.

Структура ОП включает следующие компоненты:
цикл общеобразовательных дисциплин - (56 кредитов);
цикл базовых дисциплин - (87 кредита);
цикл профилирующих дисциплин- 70 кредитов);
профессиональную практику - (19 кредита);
итоговую аттестацию- (8 кредитов);
общее количество кредитов составляет 240.

Выводы:

- Информационные системы (ИС) играют критически важную роль в современном обществе, являясь неотъемлемой частью практически любой организации. Специалисты в области ИС востребованы и имеют широкие возможности для карьерного роста. Они занимаются проектированием, разработкой, внедрением и сопровождением систем, которые автоматизируют бизнес-процессы, обеспечивают эффективное управление данными и поддерживают принятие решений.
- Образовательная программа рекомендуется к использованию в учебном процессе;
- Образовательная программа 6В06114 - «Информационные системы» (бакалавриат) направлены на улучшение многих аспектов организации, таких как управление данными, представление информации, принятие решений, оптимизация бизнес-процессов и достижение бизнес-целей.

Директор ТОО
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ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 6В06114 - «Информационные системы»
АО «Казахский университет технологии и бизнеса»

Образовательная программа (далее ОП) 6В06114 - «Информационные системы», реализуемая в АО «Казахский университет технологии и бизнеса» (бакалавриат), представляет собой систему учебно-методических документов, регламентирующих цели, ожидаемые результаты, содержание, условия и технологии реализации образовательного процесса, систему оценки качества подготовки выпускника и соответствует нормативно-правовым актам МОН РК.

ОП разработана и утверждена на основании требований Государственных общеобязательных стандартов высшего и послевузовского образования (Приказ МОН РК от 31.10. 2018 г. № 604, Приложение 5).

Целью образовательной программы 6В06114 - «Информационные системы» (бакалавриат) является подготовка высококвалифицированных и конкурентоспособных специалистов, обладающих знаниями, навыками и компетенциями, необходимыми для проектирования, разработки, внедрения, сопровождения и эксплуатации информационных систем в различных отраслях экономики.

В образовательной программе 6В06114 - «Информационные системы» (бакалавриат) объем теоретической подготовки позволяет обеспечить уровень, соответствующий требованиям к уровню подготовки студентов на основе Дублинских дескрипторов первого уровня высшего образования (бакалавриат) и отражают освоенные компетенции, выраженные в достигнутых результатах обучения.

Образовательная программа 6В06114 - «Информационные системы» (бакалавриат) имеет достаточное кадровое, учебно-методическое, информационное и материально-техническое обеспечение, необходимое для подготовки высококвалифицированных специалистов.

Реализация образовательной программы обеспечивается квалифицированными педагогическими кадрами, занимающимися научной и научно-методической деятельностью. К преподаванию дисциплин профессионального цикла привлечены преподаватели, 50 % которых имеют ученые степени и ученые звания.

Образовательная программа включает в себя следующие основные модули 6В06114-«Информационные системы» (бакалавриат): «Математика и физика», «Архитектура компьютерных систем и сетей и информационная безопасность», «Интеллектуальные системы» теоретическую и практическую подготовку высококвалифицированных специалистов в области информационных систем, а также обобщение и анализ, обеспечивает способность ставить цели и выбирать пути его достижения в разработке программного обеспечения и автоматизации информационных процессов.

Практические навыки применения современных инструментов моделирования с использованием прикладных компьютерных программ и систем проектирования обеспечивают дисциплины: «Программная инженерия», «Компьютерное моделирование и проектирование».

Модуль «Алгоритмизация и программирование», «Базы данных» обеспечивают освоение основ работы с большими данными (big data) и технологий, применяемых для их обработки, умение проектировать и создавать базы данных, включая определение схемы, таблиц и отношений.

Дисциплины Современные методы и средства программирования, Основы программирование на языке Python, Объектно-ориентированное программирование (Java), Современные инструменты и технологии интеллектуального анализа данных

обеспечивают освоение современных методов и инструментов соответствующих модели компетенций бакалавра ОП 6В06114-«Информационные системы»:

- Применяет современные методы построения и анализа алгоритмов, а также методов оценки их сложности, средства языка программирования и специфики реализации многопоточности (многозадачности) процесса разработки ПО,

- знает парадигмы модульного и объектно-ориентированного программирования, создает и настраивает масштабируемые Web - приложения на базе современных библиотек и фреймворков, устанавливает взаимосвязь с сервером. На основании приведенной экспертизы можно сделать следующие выводы:

- представленная к рассмотрению программа отвечает требованиям ГОСО РК;

- структурные элементы программы реализуются с учетом компететностного подхода;

- дисциплины учебного плана логически отражают содержание профиля подготовки с учетом междисциплинарных связей;

- Учебно-методическое обеспечение представлено рабочими программами дисциплин, аннотациями рабочих программ дисциплин, фондами оценочных средств дисциплин, разработанными программами практик и итоговой государственной аттестации;

- характеристики среды вуза и факультета позволяют обеспечить развитие общекультурных компетенций выпускника.

Предложения по совершенствованию образовательной программы:

Информационные системы быстро превратились из футуристической концепции в ключевой элемент нашей повседневной жизни. В основном это связано с достижениями в области информационных технологий, которые произвели революцию в различных областях, учитывая устойчивую динамику изменения методов и инструментов, предлагается обновить элективные дисциплины на 10-20% в соответствии с компетенцией выпускника ОП 6В06114 – «Информационные системы» (бакалавриат) и требованиями рыночной экономики и спросом работодателей.

- Включите дисциплину, этики и безопасности в ИС, чтобы студенты знали о рисках и обязанностях при разработке и применении технологий.

- Сформировать дисциплину, которая объединяет науки о данных, программирование и этику, чтобы студенты могли понимать не только технические аспекты, но и социальные последствия использования ИС.

Выводы:

- Образовательная программа рекомендуется к использованию в учебном процессе;

- Структура и содержание образовательной программы 6В06114 - «Информационные системы» (бакалавриат) имеет направленность на удовлетворение потребностям рынка труда и работодателей, соответствует аналогичным программам бакалавриата Европейского образовательного пространства и позволяет достичь ожидаемых результатов обучения.

ТОО "Arta Software"
Ген.директор
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