KARAGANDA STATE ECONOMIC UNIVERSITY
OF KAZPOTREBSOYUZ

"Approved" Rector of the Karaganda
Economic University of
Kazpotrebsoyuz, Doctor of
Economics, Professor
Ayupov Zhumbetov E.B
_____
_____2019г.

Approved at the meeting
KEUK Scientific Council
Protocol №9 of «28» may 2019г.

EDUCATIONAL PROGRAM

6B06101 "INFORMATION SYSTEMS"

Level: Undergraduate (BA)

Karaganda 2019

The educational program 6B06101 "INFORMATION SYSTEMS" was compiled on the basis of the State Compulsory Standard of Higher / Postgraduate Education, approved by the Order of the MES RK from 31.10. 2018 No. 604, Rules for the organization of the educational process on credit technology

Training April 20, 2011 № 152 (with changes and additions).

Developers (academic committee):

Reviewers (experts):

The educational program was discussed and approved at a meeting of the academic committee "___" _____ 20__, protocol № ___

The educational program was reviewed and recommended at the meeting of the Faculty Educational and Methodological Council. Protocol №__ from «___» _____201_

CONTENT

1. Passport of the educational program

№	Field name	Note
1	Registration number	This field should be displayed after the primary saving of the application form. The field is locked for editing.
2	Code and classification of the field of education	**6B06 Information and communication technology**
3	Code and classification of training areas	**6B061 Information and communication technologies**
4	Group of educational programs	**Information and communication technology**
5	Name of the educational program	**6B06101 Information Systems**
6	Type EP	a) The current EP
7	Target EP	**High-quality training of innovation-oriented specialists in the field of information systems and technologies on the basis of a single process of obtaining, disseminating and applying new knowledge.**
8	ISCED level	**6**
9	NQR level	**6**
10	ORC level	**6**
11	Distinctive features of EP	**Studying the basic methods of algorithms and programming, creating and modeling business processes based on modern programming languages Pyhton, C ++, Jawa, organization of computer systems and networks, database management and knowledge; the design of IP and its protection will allow the formation of professional competencies and skills of specialists in the development of IP in the development of the digital economy.**
	University partner (SOP)	
	University Partner (PDD)	
12	List of competencies	Formed a matrix of correlation of the educational results of the educational program with the formed competencies **(Annex 2.1)**
13	Learning outcomes	
14	Form of study	Full time
15	Language of study	Russian
16	Объем кредитов	F / T 240 credits
17	Awarded academic degree	**Bacheolor**
18	Availability of application to the license for the direction of training	The educational program of the specialty 6B060101 "Information Systems" is implemented on the basis of a license No. KZ10LAA00007296 issued by the Committee for Control of Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan dated June 22, 2016, the number of the annex to license No. 001 In 2018, the specialty "Information Systems" was accredited by the IQAAA RK.
19	The presence of accreditation EP	**Yes**

	Name of accreditation body	Independent Kazakhstan Agency for Quality Assurance in Education
	Duration of accreditation	2023 year.
20	Information about the disciplines	Information about the disciplines VK / KV LTD, DB, PD **(Appendix 2.2)**

2. Qualification characteristics of the graduate of the educational program

2.1 Awarded degree: Bachelor of Business and Management in the specialty 6B060101 "Information Systems"

2.2 The list of specialist positions: Bachelors of the 6B060101 specialty "Information Systems" can perform the following types **of professional activity:**

design;

production and technology;

experimental research;

organizational and managerial;

operational.

3. Content of the educational program

3.1 Curriculum of the educational program

Discipline cycle	Code disciplines	OK/ KB/ BK	Name of the discipline	Credits	The form of control	Types of academic work l / pr / SRSP / SRS / preparation for delivery of copies	Semester distribution								Learning outcomes
							1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
	1. SMPP Social and Political Knowledge Module			**9**											
OOD	SPKP	OK	Sociology, Political Science, Cultural Studies, Psychology	8	Exam testing	30/30/60/90/30	4	4							KK1 , PO1 , PO2
DB	UP		Educational practice	1	report			1							
	2. SGM Socio-humanitarian module			**15**											
OOD	EBZh/Re/Me	KB	Ecology and life safety / religious studies / magician ate	5	Exam testing	30/15/15/75/15	5								KK1 , PO1 , PO2
OOD	CIK	OK	Modern history of Kazakhstan	5	Voice State exam	30/15/15/75/15	5								
OOD	Fil	OK	Philosophy	5	Exam testing	30/15/15/75/15			5						
	3. IFKS Module of Physical Culture and Sport			**8**											
OOD	FK	OK	Physical education	8	differential test		2	2	2	2					KK1 , PO1 , PO2
	4. YAM Language Module			**26**											
OOD	IYa	OK	Foreign language	10	Voice exam	0/90/30/150/30	5	5							KK1 , PO1 , PO2
OOD	K(R)Ya	OK	Kazakh (Russian) language	10	Voice exam	0/90/30/150/30	5	5							
DB	MK"POYa"	BK	Interdisciplinary course "Professionally-oriented language"	**6**	Exam testing	0/60/30/60/30			3	3					
	5. EN Module Natural Science			**25**											
OOD	ICT	OK	Information and communication technologies	5	Exam testing	15/30/15/75/15		5							KK2 , PO3
DB	Fiz	KB	Physics	5	Written exam	15/30/15/75/15		5							
	OF		Basics of electrical engineering												
DB	CS	KB	Digital circuit design	5	Exam testing	15/30/15/75/15				5					
	TEC		Electrical Circuit Theory												
DB	Mat	KB	Maths	5	Exam testing	15/30/15/75/15	5								
	MA		Mathematical analysis												
	6. AP Module Algorithmization and programming			**30**											
DB	ASDP	KB	Algorithms, data structures and programming	5	Course project, Written exam	15/30/15/75/15		5							KK3 , PO4 PO5, PO6
	JMP		Programming languages and methods												
DB	TP	KB	Programming technology	5	Exam	15/30/15/75/15			5						

	TRP		Software Development Technologies		testing										
DB	SPO	KB	System software	5	Exam testing	15/30/15/75/15			5						
	Os		Operating Systems												
DB	P1CP	KB	Programming in 1C on platform 8.3	5	Written exam	15/30/15/75/15							5		
	P1C		Programming in 1C												
DB	ST	KB	Smart technology	5	Report of Project						5				
	MVSP		Mobile computing systems and their programming												
DB	OOP	KB	Object Oriented Programming (Java)	5	Exam testing	15/30/15/75/15					5				
	IT		Internet technologies												
DB	PP		Educational practice	5	report					5					
7. IBE Business Process Modeling Module				**20**											
DB	MMY	KB	Models and methods of management of IT-projects	5	Report of Project	15/30/15/75/15					5				KK4 , PO7
	OKM		Basics of computer simulation												
DB	AMBPP	KB	Analysis and modeling of business processes in the enterprise	5	Written exam	15/30/15/75/15			5						
	AIS		Analytical Information Systems												
DB	RIP	KB	Reengineering of information processes	5	Report of Project	15/30/15/75/15				5					
	IM		Information Management												
DB	ITRI	KB	IT solutions and industry 4.0	5	Exam testing	15/30/15/75/15						5			
	SII		ERP systems												
8. OKCC Module organization of computer systems and networks				**25**											
DB	AOKS	KB	Computer Systems Architecture and Organization	5	Exam testing	15/30/15/75/15					5				KK5 , PO8, PO9
	TCT		Telecommunication systems and technologies												
PD	ST	KB	Network technologies	5	Written exam	15/30/15/75/15						5			
	PST		Network Programming												
PD	KDT	KB	Computer design technology	5	Exam testing	15/30/15/75/15						5			
	KDT		Computer design												
PD	RKP	KB	Web component development	5	Course project, Report of Project	15/30/15/75/15							5		
	WP		Web - programming												
PD	EB	KB	E-business	5	Report of Project	15/30/15/75/15					5				
	EK		Electronic commerce												
DB			Educational practice									5			
9. UD Data Management Module				**10**	report										
DB	BDIS	KB	Databases with information systems	5	Course project, Exam testing	15/30/15/75/15				5					KK6 , PO10, PO11
	ORC		Object-relational DBMS												
DB	BD	KB	Big Data	5	Exam testing	15/30/15/75/15						5			
	RBDXD		Distributed Databases and Data												

			Warehouses												
10. PISZI IP Design and Information Security Module				**20**											
PD	ISCE	KB	Information Systems in the Digital Economy	5	Report of Project	15/30/15/75/15									
	ITY		IT in management												KK7 , PO12
PD	PIS	KB	Projecting of IS	5	Course project, Report of Project	15/30/15/75/15							5		
	TRNS		Development Technologies on Net Systems												
PD	SII	KB	Artificial intelligence systems	5	Report of Project	15/30/15/75/15							5		
	IS		Intellectual systems												
PD	IBZI	KB	Information Security and Information Security	5	Written exam	15/30/15/75/15							5		
	OIB		Basics of Information Security												
DB			Minor	20	exam				5	5	5	5			
DB		OK	Educational practice	10	report									10	
DB		OK	Undergraduate practice	5	report									5	
		OK	Writing and graduation defense work (project) or passing state exams in two major disciplines	12	protection									12	KK8, PO13
			The overall complexity of the educational program	**240**			31	32	30	30	30	30	30	27	

3.2 Information about the disciplines

№	Name of the discipline	Brief course description (30-50 words)	Num-ber of credits	Formed competencies (codes)
Cycle of general education disciplines University Component / Optional Component				
1.	Sociology	Sociology as a science, The main stages of the formation and development of sociology, Modern sociological theories, Methodology of sociological research, Methods of collecting sociological information, Society and social interactions, Social groups, organizations and institutions, Socialization of personality, Social inequality and social stratification, Culture and society, Sociology families and gender, Sociology of youth, Sociology of deviant behavior, Sociology of work and economic life, Sociology of education and mass media formation	2	KK1
2.	Political science	The main stages of the development of political knowledge in the history of civilization, Power as a political phenomenon, Political systems of the present, State and civil society, Political regimes. Political development and modernization, Political process and political activity, elites and political leadership, technologies. World politics and modern international relations. Global problems of the present, Sovereign Kazakhstan in the system of international relations, The main priorities of the foreign policy of the Republic of Kazakhstan. Development Strategy of Kazakhstan until 2050	2	KK1
3.	Culturology	Cultural studies as a science. The concept and essence of culture The main research approaches in the analysis of culture. Culture as the world of man. Language and cultural forms Culture and civilization. Typology of culture. Archaic culture. Culture of civilizations of Western Asia. Jewish culture Culture of Egypt Culture of India Culture of China Ancient culture Culture of the classical Arab East Culture of Europe. General features of modern culture Kazakh culture. Cultural policy of sovereign Kazakhstan	2	KK1
4.	Psychology	Mind and body. The structure and levels of the psyche. Conscious and unconscious in the human psyche. Mental cognitive processes. Individual, personality, subject, individuality. Interpersonal relations and psychology of work in working groups on software development.	2	KK1
5.	Ecology and life safety / Religious studies / Eternal country	This discipline reveals the content of the basic laws that determine the interaction of living organisms with the environment, the patterns of development of the biosphere, the functioning of ecological systems and the biosphere as a whole, as well as first aid and human protection in the technosphere from the negative effects of anthropogenic and natural origin	5	KK1
6.	Modern history of Kazakhstan	The modern history of Kazakhstan forms objective historical knowledge about the main stages of modern Kazakhstan, directs the student's attention to the implementation of the Ruhani Zhanyru program, to the formation and development of historical and cultural processes and statehood. The course covers the problems of the ethnogenesis of the Kazakh people, the evolution of the forms of statehood and civilization on the territory of the Great Steppe, reveals the most significant historical facts and events, fills the content of the Kazakh model of development in the period of accelerated modernization with real scientific and historical knowledge.	5	KK1
7.	Philosophy	The philosophy is aimed at developing students' openness of consciousness, understanding their own national code and national identity, spiritual modernization, constructive-critical thinking, the cult of knowledge and education. The course is focused on mastering philosophical culture by students in the context of modernizing social consciousness and solving global problems of modernity, developing reflection in students, developing and strengthening tolerance, intercultural dialogue and a culture of thinking.	5	KK1
8.	Physical education	Physical culture is a set of values, norms and knowledge created and used by society for the purpose of physical and intellectual development of a person's abilities, improvement of his physical activity and the formation of a healthy lifestyle, social adaptation through physical education, physical training and physical development.	8	KK1
9.	Kazakh language	The course content includes lexical and grammar topics aimed at the development of all types of speech activity and vocabulary work, the development of everyday conversation in various situations and the terminology of the Kazakh language.	10	KK1
10.	Foreign language	The content of the discipline covers a range of issues related to the practical development of a foreign language in the context of a dialogue of cultures. Discipline is aimed at mastering the knowledge and skills that allow the use of a foreign language in interpersonal communication and professional activities. All types of speech activities are being taught (listening, speaking, reading, writing).	10	KK1
11.	Information And Communication Technologies	The purpose of the discipline is to prepare highly qualified specialists with the skills to apply modern information technologies in the professional field in the context of implementation of the state program Digital Kazakhstan. This discipline forms the ability to critically evaluate and analyze processes, collecting, processing, search and storage methods, ways of transmitting information using digital technologies.	5	KK2
Cycle of basic disciplines University component				
12.	Interdisciplinary course "Professionally-oriented language"	The subject is aimed at students mastering the knowledge and skills necessary for them in the production process in their future professional activity. Studying the discipline will contribute to the development of thinking and improving the culture of speech in the business sphere of students of all specialties. Discipline studies vocabulary, grammatical structures, main types of communicative activities in the state language,	6	KK2

		taking into account the specifics of the professional activities of all specialties		
13.	Physics /	The course's description: Introduction. The role of the study of physics in the formation of knowledge of food technology. Kinematics. Dynamics.Laws of conservation of momentum and energy. Vibrations and waves. Statistical physics and fundamentals of thermodynamics. Electromagnetic oscillation. Optics. Quantum theory.	5	KK2
14.	Basics of electrical engineering	The course's description: Introduction to electrical engineering. The role of discipline in future professional activity. Linear electric circuits of direct current.Kirchhoff's laws and their application.Linear electric circuits of alternating current.Conductivity of the sinusoidal current circuit. Elements of electronic technology. Electronic devices	5	KK2
15.	Digital circuit design.	Semiconductor diodes and transistors. Transistor-Transistor Logic (TTL) and Emitter-Coupled Logic (ECL) Elements. Trigger schemes. Trigger schemes. Registers. Encryptors, decoders. Multiplexers and demultiplexers, digital comparators, adders. Digital counters. Semiconductor memory devices. Dynamic storage devices (DRAM). Permanent memory devices (ROM). Operational Amplifiers (OU). Analog-to-digital and digital-to-analog converters. Circuit design power supply. Interrupt control, plug and play control.	5	KK2
16.	Theory of electrical circuits.	Basic concepts and properties of linear electrical circuits. Basic laws and methods for analyzing linear electric DC circuits. Ohm's laws. Kirchhoff laws and their application. Calculation methods and modes of operation of the electrical circuit. Linear electric circuits in the mode of harmonic effects. Harmonic oscillations in circuits with resistive, inductive and capacitive elements. Three-phase electrical circuits. Connection of three-phase receivers star and triangle.	5	KK2
17.	Maths	It will allow students to form basic knowledge about fundamental concepts, the laws of classical and modern mathematics, about the techniques and methods for solving specific problems; develop skills in the use of studied mathematical methods and algorithms for solving the problem and apply them to solving theoretical and applied problems of the corresponding specialty.	5	KK2
18.	Mathematical analysis	It will allow students to form basic knowledge about fundamental concepts, the laws of classical and modern mathematics, about the techniques and methods for solving specific problems; develop skills in the use of studied mathematical methods and algorithms for solving the problem and apply them to solving theoretical and applied problems of the corresponding specialty.	5	KK2
Cycle of basic disciplines Component of choice				
19.	Algorithms, data structures and programming.	The study of the discipline will provide systematic knowledge about the content of statistics as a scientific discipline and as a field of practical activity, allowing to collect and process statistical information about the economy; to develop the skill of applying statistical methods; work with the main sources of statistical information; to carry out statistical observations in various areas of the enterprise, to develop the competencies necessary to use statistical tools in solving professional problems of analyzing economic processes and phenomena.	5	KK3
20.	Programming languages and methods	Programming languages. Types of data and operations. Instructions, functions, modules. Object Oriented Programming. Development of graphical interfaces. Tools for creating graphical user interfaces. Creating and configuring a widget. Accommodation Manager.	5	KK3
21.	Programming technology	Software personal computer. Programming methodology. Development of structural schemes of algorithms. Methods of software design. SI operators. Data structures Functions. Objects and classes. Arrays and strings. Overload operations. Inheritance. Pointers. Virtual functions Streams and files. Students should acquire knowledge in the development of structural schemes for various algorithms, gain skills and abilities to debug and test programs and make high-quality software documentation.	5	KK3
22.	Technology development programs.	Familiarity with the platform. NET. C # language overview. Value types and reference types. Operators and exceptions. Arrays Methods Ways to pass parameters. The basics of object-oriented programming. The basic techniques for working with reference types. Creation and destruction of objects. Automatic garbage collector. Inheritance. Interfaces Namespaces and components. Operators and events. Properties and indexers. Properties and attributes.	5	KK3
23.	System software.	The concept of resource, process, the principle of modularity, compatibility. The main system calls OS UNIX. Interrupt handling by the operating system. Processes and threads (threads) of control. System tools for memory management. Tools for creating and debugging tasks. Types of OS. Design and implementation of the driver in the OS Linux. Multi-threaded programming. Communication processes in networks. Remote procedure calls. Visual C ++ MFC as a means of implementing system software in the Windows environment.	5	KK3
24.	Operating Systems.	Classification of operating systems. OS interface with users. Download programs. The organization of processes. Process management I / O control. File system. Memory management Segment and page virtual memory. Management of programs. OS maintenance. Telecom access control. Handling errors and exceptions. Security.	5	KK3
25.	Programming in 1C on a platform 8.3.	Learning the basics of programming in the embedded language 1C. Start of development. Constants, the basics of client-server programming, general details. Design of reference books and development of forms. Creating elements of simple reports. Documents, accumulation registers. ACS. Algorithm of the expenditure document. Journal of documents. Revolving accumulation registers, sequences, numerators, information registers. Processing and transmission of information in Smart - mode.	5	KK3
26.	Programming in 1C.	Learning the basics of programming in the embedded language 1C. Start of development. Constants, the basics of client-server programming, general details.	5	KK3

		Design of reference books and development of forms. Creating elements of simple reports. Documents, accumulation registers. ACS. Algorithm of the expenditure document. Journal of documents. Revolving accumulation registers, sequences, numerators, information registers		
27.	Smart technology.	Basic methodological concepts of discipline, the concept of SMART-technologies and the possibility of their application. - Methods and means of automating basic engineering systems, managing engineering systems of modern technologies, software and hardware solutions for building integrated systems. Automation and control; - Technical means of automation of engineering systems; - Technical measurements and instruments; - The main methods of programming and algorithmization.	5	КК3
28.	Mobile computing systems and their programming.	Technological and system stack. Basic OS modules. Overview of the advantages and disadvantages of the Android OS. Comparison with other mobile OS. The differences between applications on Android from the web and Java desktop applications. Setting up the development environment. Markup elements custom applications. Using the menu. Signaling. Sensor control. Network Connectivity Management. Getting device information. Service sending and receiving SMS. Supports Bluetooth / Wi-Fi protocols. Installing the gateway via Wi-Fi Direct.	5	КК3
29.	Object Oriented Programming (Java)	The study of the development of software engineering systems based on object technology. Introduction to object-oriented programming. Basics of Java programming. The syntax of the Java language. Graphic user interfaces. Applets. Servlets Java Server Pages (JSP) technology. Network capabilities Access to databases. JavaBeans technology. Overview of advanced technology language Java.	5	КК3
30.	Internet technologies.	Theoretical understanding of the essence of the Internet technologies, the study of the components of the Internet technology, training in the design of Internet applications. Internet technology architecture. Hypertext Markup Language - NTML. Creating a WEB - site. Advanced XML markup language. Creating applications for the dynamic presentation of WEB - pages. Portal technology. Web site promotion. The exchange of information between applications.	5	КК3
31.	Models and methods of management of IT-projects.	Mastering models and methods of management in the study and design of information systems A systematic approach to the study of economic phenomena. Mathematical methods and basic classes of optimization problems. Linear and integer programming. Nonlinear programming. Game methods to justify decisions. Basics of network planning and management. Simulation of queuing systems.	5	**КК4**
32.	Basics of computer simulation.	Introduction to the discipline "Basics of computer simulation." Monte Carlo method. Simulation of random events. Simulation of continuous random variables. Simulation of discrete random variables. Simulation of multidimensional random variables. Simulation of random processes. Modeling event streams. Identification of random patterns. Organization of computer simulation. Simulation of queuing systems. Computer simulation of economic and organizational systems.	5	КК4
33.	Analysis and modeling of business processes in the enterprise.	Analysis, modeling and reengineering of business processes using BPwin (standard IDEF0, IDEF3, DFD). The choice of business process modeling methodology. Methods and practical experience of modeling and analysis of business processes of the enterprise. The introduction of a process management system of the enterprise. Business process modeling tools.	5	КК4
34.	Analytical Information Systems	acquaintance of students with the principles of construction and work of analytical information systems, development of bases the analysis of data by them and acquisition of practical skills of application modern analytical information systems (CASE systems), design of a system loading of data in information storages, processings of inquiries and representations of results the analysis.	5	КК4
35.	Reengineering information processes.	The history of the creation of the theory of business process reengineering. Business modeling using object-oriented methodology. Business modeling using IDEF methodology. Principles of reengineering. The preparatory stage of technology reengineering. Stages of reverse and direct engineering. Building an information system to support the new business. Reengineering support tools.	5	КК4
36.	Information Management.	Information as a conceptual resource of the head of the organization. Information Methodology Information Management (IM). Analysis of management information systems. Open systems and IM. Information system profiles for IM. Consulting and information management. Corporate information systems. Providing parts of the KIS. Technology information management. The structure of the corporate information system "Galaxy", "Flagman", etc. New system design of corporate information systems.	5	КК4
37.	IT solutions and industry 4.0.	IT solutions form the image of the organization, which is necessary for business. An IT-based business is profitable and efficient. With the development of technology, it became possible to create special projects for the rapid promotion of their own business. A properly chosen solution of an integrated type ensures effective business improvement, therefore, the introduction of IT solutions in a modern enterprise is necessary.	5	КК4
38.	ERP-system.	Information control systems. A brief excursion into the history of ERP. The role of ERP-system. The concept of enterprise resource planning systems. The concept of new generation systems - ERP II. The possibilities of ERP-systems. Functions of the ERP system. The main purpose of the ERP-system. Scope of ERP-systems. Characteristics of ERP-systems. The choice of ERP-systems. ERP-system architecture. Classification of ERP-systems. Market analysis of ERP-systems. Implementation. New trends: rent ERP-systems.	5	КК4
39.	Architecture and organization of computer systems.	The composition and purpose of the elements of computer systems. Presentation of information in the computer. Functional nodes of the computer. Main characteristics and classification of computer storage devices. Types of RAM. Permanent storage	5	**КК5**

		devices. CPU devices. Organization of the processing part of the microprocessor. Central control unit (CCU). The means of the firmware of the processor. I / O organization. Ways to share information. Distributed data processing systems. Fundamentals of personal computer architecture, trends in the development of architectural computing systems.		
40.	Telecommunication systems and technologies.	Voice signals, musical, data images. Analog-to-digital and digital-to-analog conversion. Videotex. Compress video data. Modems Data compression in facsimile. Telephone and equipment. Telex communication. Radio communication: radio relay communication lines, cellular networks, satellite communication. Optical communication. Types of modulations. High-speed data transmission systems. Switched networks. Signaling. Alarm systems. Non-switched networks. Local area networks. Global Networks. Multiplexing. Organizations and standards.	5	KK5
41.	Databases with information systems.	Relational approach to database organization. Stages of database design. Oracle DBMS. Oracle DBMS. SQL. SQL. Data manipulation language commands. SQL. Data management language commands. Indices and views. Transaction management PL / SQL language. Execution of software designs. Cursors. Oracle database objects. Oracle DBMS Architecture and Administration. Modern data models, trends, research directions in the development of the database.	5	**KK6**
42.	Object-relational DBMS.	Relational approach to database organization. Stages of database design. Oracle DBMS. Oracle DBMS. SQL. SQL. Data manipulation language commands. SQL. Data management language commands. Indices and views. Transaction management PL / SQL language. Execution of software designs. Cursors. Oracle database objects. Oracle DBMS Architecture and Administration. Modern data models, trends, research directions in the development of the database.	5	KK 6
43.	Big Data.	Designing internal data warehouses, with the binding of data from different systems, as well as the creation of dashboards and analytical reports. Using BI-systems (Oracle, IBM and others), SQL, ETL tools and programming languages. Intelligent analysis of structured and unstructured data. Using statistics, machine learning and advanced predictive analytics to solve key business problems. Features of the implementation of big data technologies in practice, incl. data monetization, choice of infrastructure, project management.	5	KK 6
44.	Distributed Databases and Data Warehouses	Acquaintance with the construction of distributed databases, the acquisition of practical skills in distributed DBMS Architecture and principles of a distributed approach. Multidimensional data view. Physical model RBD. Logical model RBD. Basic object architectures of distributed systems. Distributed DBMS. Transaction management Data replication Stored procedures and triggers. Query optimization	5	KK 6
Cycle of majors University Component / Optional Component				
45.	Network technologies.	Network classification. The basic model of the organization of the interaction of open systems (OSI model). TCP / IP stack. TCP / IP protocols. Hardware computer networks. Hardware computer networks. Routers, gateways. Ethernet technology. Standards Fast Ethernet, Gigabit Ethernet, Token Ring, FDDI and CDDI. Technologies for building and operating global networks. Telephone networks and their use for data transmission. X.25 networks. Network Frame Relay, TDM, ATM. The organization of the Internet network.	5	**KK 5**
46.	Programming network technologies.	The subject and objectives of the course. Hypertext Markup Languages (HTML, DHTML, XML, XSL). Client scripts (Java¬Script, VbScript). Java language. Overview of the basic structures and basic elements of the language. Introduction to Java classes. Means for organizing work in the network. Multi-threaded programming. UI development in Java. Technology development of software applications. RMI technology. Web application development using ASP, JSP, SERVLETS. Java Beans components.	5	KK 5
47.	Computer design technology.	This is a set of methods, methods, operations that are used to create visual messages intended for dissemination through the media. It is directly connected with computer methods of creating, processing, editing, importing, exporting, recording, displaying, transmitting and printing information (graphics, photographic images, text). Computer equipment and software are tools that almost no designer can do without.	5	KK 5
48.	Computer design.	Introduction to computer graphics and design. Flesh animation. Program processing video and sound. Graphic editor Adobe Photoshop. Drawing technique in Adobe Photoshop. Corel Draw.3D STUDIO MAX. Overview of the elements of the interface 3D STUDIO MAX. Working with units of measurement, bindings and other drawing aids 3D STUDIO MAX. Methods for selecting objects in 3D STUDIO MAX. Using the Resource Manager and Expansion Module in 3D STUDIO MAX. Conceptual basis of modeling objects in 3D STUDIO MAX.	5	KK 5
49.	Web component development.	Mastering the main components, principles of organization and functioning of the Internet, training in the design of applications for use in the Internet environment. Client-server architecture. Transfer information to the Internet. WEB - technologies in networks of various levels. TCP / IP protocol stack. Addressing the Internet. Application layer protocols of the OSI model. Application protocols TCP / IP. Telnet and NNTP protocols. IP telephony. Hypertext Markup Language HTML Documents. Cascading Style Sheets (CSS). CGI technology. Flash technology. Protection of information in computer networks.	5	KK 5

50.	Web - programming	Basics of HTML. Versions of HTML and XHTML. Basic HTML tags Tables, lists and links in HTML. Basics of CSS. Basic techniques of layout. Basic layouts. CSS frameworks. Server technologies - the general principles of building a web application. PHP, Python, Ruby, Go. Basic PHP constructs. Form data processing. DBMS for web applications. PDO for working with databases in PHP. Regular expressions in PHP. Template engines. Smarty basics. Client technology. Javascript basics. Basic language constructs. Javascript frameworks. jQuery, Prototype, extJS.	5	KK 5
51.	E-business	E-business and company strategy. Segments of the electronic market. Develop a business plan. Profit making models in e-commerce. The complex of electronic marketing. Product and market analysis. Information storage and processing technologies. Methods for determining the economic efficiency of e-commerce systems. CRM-systems as a means of realizing business relations. Payment systems in electronic business. Information and telecommunication technologies and systems. Ethical and legal aspects of e-business.	5	KK 5
52.	E-commerce.	Information technology used in e-commerce. Features of e-commerce regulation in various countries. E-commerce in Kazakhstan. Digital Signature. E-government. Use and configuration of payment systems. Copyright on the Internet. Internet security.	5	KK 5
53.	Information systems in the digital economy.	Information technologies based on the use of personal computers, local area networks and global systems in the Republic of Kazakhstan. Organization of data banks, automated workplaces. Decision support systems based on expert systems. Information technologies in various subject areas (accounting, banks, statistics, management, marketing, etc.).	5	**KK7**
54.	IT in management.	Overview of IT resources in management. The creation and development of modern IP. New information technologies. Tax information technology. Banking information technology. Accounting information systems. Statistical information systems. EIS management. Marketing information systems. IT systems in customs. EIS management insurance companies. Information systems of the securities market. Information technology in trade. Corporate information systems.	5	KK7
55.	Projecting of IS.	Information systems as an object of design. Methodological principles of information systems design. Development of pre-project, project stages and commissioning. Models and methods for designing functions, processes, components. Models and methods of statistical and dynamic control of the project. Designing information systems at the macro level. Instrumental software for designing information systems. Means, methods and methods of design management	5	KK7
56.	Development technologies on Net systems.	Microsoft.Net platform. An overview of the architecture and features of Rotos and Mono. Phoenix. Data mining technology. Modern Web development tools. XML Web Services. Embedded Operating Systems. Mobile application development. Technologies operating system Windows Vista. New file system Win FS. Modern information security technologies. Development of information systems based on templates. Modern testing technology.	5	KK7
57.	Artificial intelligence systems.	Logical model of knowledge representation and inference rules. Production model of knowledge representation and processing rules. Relational models of knowledge representation and corresponding reasoning. Frames Semantic networks. Technique of acquiring knowledge. Expert systems - tools of automated learning systems. Knowledge base. Rules, objects, query definition, editor, procedural language, compiler of rules and objects. Means of working with files. Types of objects. Procedural language operators. Languages of artificial intelligence. The concept of fuzzy sets. The implementation of expert systems in the Windows environment.	5	KK7
58.	Intellectual systems.	Organizational and mathematical foundations of IP. Prologue is the use of predicate logic. Knowledge Engineering. Statistical approach to IP. Intellectual systems, logical conclusion. Creation of software for advanced AI systems. Technology design of economic intelligent systems (IP). Design and organization of IP "Deduction". Neural networks. Kohonen self-organizing maps. Cluster analysis methods. Neuropackages. Data mining process. Intellectual systems. Simulation of intelligent systems.	5	KK7
59.	Information security and information security.	Information security in the implementation of information processes of input, output, transmission, processing and storage of information. Software to protect information in computer networks. Protection of information from unauthorized access. Protection of information in open networks and ACS, TCP / IP protocols and corporate networks. Cryptographic information security tools. Software implementation of encryption algorithms. Organizational means of protecting information in computer networks. Technical means of information protection.	5	KK7
60.	Basics of information security.	Analysis of software and hardware IC platform. IP security models. Practical implementation of protection and safety systems. Building password systems. Features of the use of cryptographic methods. Symmetric and asymmetric encryption systems (public key cryptography). The main characteristics of a secure information system. Methodology of information security correctness. Optimal management of protection processes. Computer viruses and antivirus programs.	5	KK7
61.	**Minor programs:** - Entrepreneurial projects	Entrepreneurship. Business planning. Management of risks. Entrepreneurial projects: management and implementation	20	**KK8**
	- Finance	Finance, Taxes and Taxation, Banking, Organization of interaction between banks and enterprises		KK8
	- Basic legal	Constitutional law, Administrative law of the Republic of Kazakhstan, Labor law, Public service and management.		KK8
	- Legal basis of business	Business Law of the Republic of Kazakhstan, Civil Law of the Republic of Kazakhstan,		KK8

		Legal and customs tariff regulation of foreign economic activity, Labor Law of the Republic of Kazakhstan		
	Practice: Training	Safety Instructions. Excursion. System software. Perform specific tasks using application software: Editing and formatting text in Word Making calculations in Excel spreadsheet Database development in the database "Access". Features and main characteristics of the studied algorithmic language. Familiarity with the Python environment. Work in the global network.	1	
	Production	Familiarize yourself with the current data processing system at the practice site. Examine the technical support. Design software, economic and mathematical models, algorithms for solvable problems, justify the choice of programming language for the operating system. Describe certificates and standards. Identify the shortcomings of the current information system and describe ways to improve it.	5	
	Production	Characteristics of the practice base and organizational structure. Acquaintance with technical means, technical documentation, operating at the enterprise IP. Description of the software: system, auxiliary, instrumental and applied programs. Development of technical specifications and its own software module and database, a programmer's and user's manuals, an enterprise logo, and an enterprise website layout interface.	5	
	Production	Familiarization with the activities of the base of practice. Familiarization with the technical support of the enterprise and the architecture of the COP. The study of software tools used in the enterprise. Description of the enterprise computer network. Designing your own software module. Description of methods and means of information protection.	10	
	Undergraduate	Perform individual tasks. The subject of individual assignments is determined by the nature of pre-diploma practice and must determine: the relevance of the study, to be of practical importance; internal integrity, the rationale for decisions; The collection of materials on the degree design should be carried out in the following sections: analytical, design, experimental parts and economic rationale of the project	5	

4. Competences and learning outcomes of the educational program

4.1 List of competencies and learning outcomes

Cipher competency	Content of competence	Cipher learning outcome	The content of the learning outcomes of the educational program
KK1.	The ability of the individual to socio-cultural and physical development based on the principles of multiculturalism, multilingualism and ecological thinking	PO1	Demonstrate personal and professional competitiveness, citizenship, physical and ecological culture, formation of critical thinking, creativity and willingness to collaborate
		PO2	To carry out interpersonal, intercultural and professional communications using grammar knowledge and speech means in oral and written forms in the state, Russian and foreign languages, analyze information in accordance with the situation of communication
KK2.	Willingness to apply digital technologies for the development of production, business, science, social sphere	PO3	Use different types of ICT: Internet resources, cloud and mobile services for searching, storing, processing, protecting and distributing information.
KK3.	Knowledge of the basics of the syntax and semantics of the programming language, the main directions of development of research in the field of operating systems, develop criticality, reflectivity of thinking, professional self-organization Knowledge of methods, programming languages and programming technologies, making applications in programming languages, understanding the construction of formal languages, knowing basic methodological programming skills,	PO 4 --- PO5 PO6	Owns the basic methodological programming skills, the basics of the syntax and semantics of a programming language. Able to program in high-level algorithmic languages to solve practical problems for the Digital Economy. --- Applies methods of working with the main configuration objects on the 1C platform, working with registers, building queries, managing requests, organizing operational and accounting --- Uses computer technology, programming tools for the effective implementation of hardware and software systems
KK4.	the ability to organize and plan, initiative and entrepreneurship, have a scientific understanding of accounting, finance, etc., use modern technical tools and information technology to solve analytical and research problems	PO7.	Owns the skills and abilities of designing modern corporate systems based on Web, building high-quality, flexible and scalable systems
KK5.	ability to install, configure, administer network services of computer networks	PO8.	Able to apply practical skills of architecture selection and integration of information systems hardware, work with hardware and software / hardware complexes of information systems in various functional areas.

		PO9.	Able to work with hardware and software-hardware complexes of information systems
KK6.	be able to generalize and systematize information to create databases, to build distributed databases and data warehouses, possession of software tools for analyzing and modeling control systems, as well as modern object-relational DBMS; have the ability to effectively use corporate IT solutions in the information systems industry	PO10. PO 11	Able to set tasks, develop databases and knowledge bases Able to adapt and modernize DBMS functioning applications, ensure the security and integrity of data of information systems and technologies of object-relational DBMS Owns the skills of organizing the stages of the process of developing the objects of professional activity and has professional skills in the use of information technologies in making organizational and managerial decisions
KK7.	own methods and software business information processing. To be able to develop a feasibility study, technical task and technical project when working with projects. Ensure their information protection.	PO12.	He has in-depth knowledge of modern methods and means of designing information systems, creating technical documentation of the designed system, and organizing its information protection.
KK8	**Minor program**		
- Finance	The ability to understand the essence of financial relations, apply them to successfully run their own business and interact with other economic actors	PO13	Demonstrate an understanding of the nature of finance, navigate the basic principles of the functioning of the tax and banking systems, apply the acquired skills for effective interaction with various subjects of the country's financial system.
- Entrepreneurial projects	The ability to understand the essence of economic relations for the functioning of a successful business in the professional field		Demonstrate the ability to formulate a bank of entrepreneurial ideas, make a business plan, create an entrepreneurial structure and organize its activities. Demonstrate knowledge regarding risk classification, identify, analyze and manage risks in the implementation of projects and the functioning of the organization's business processes.
Basic legal	The ability to carry out professional activities on basis of a developed legal awareness, legal thinking and legal culture, to make decisions and take actions in management in strict accordance with the law		As a result of the training, the student will acquire a complex of knowledge and skills associated with the basic laws of the development of law; mechanism of legal regulation, features of the constitutional system, the organization of the system of state bodies and local self-government in the Republic of Kazakhstan; the essence and content of the basic concepts, institutions, legal relations in the field of labor law and the right of social protection of the population.
Legal basis of business	The ability to carry out professional activities on basis of a developed legal awareness, legal thinking and legal culture, make decisions and take actions in business and management in strict compliance with the law		He knows the legal acts regulating entrepreneurial activity, both within Kazakhstan and with the participation of foreign partners, demonstrates the ability to comment on their content and use for organizing various business entities, developing texts of business contracts, the ability to protect their rights by legal means activities in strict accordance with the law

4.2 Matrix of correlation of learning outcomes of the educational program as a whole with the formed competencies

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
KK1	*	*											
KK2			*										
KK3				*	*	*	*	*	*	*	*	*	*
KK4						*	*						
KK5								*	*	*	*		*
KK6									*	*	*	*	*
KK7									*	*	*	*	*

4.3 The competency formation map

Cipher competency	Code disciplines	The name of the disciplines that form the competence	OK/ KB/ BK	Volume of loans	Number of hours	Result assessment form
CC 1	SPKP	Sociology, Political Science, Cultural Studies, Psychology	OK	8	240	Exam testing
	UP	Educational practice		1	30	report

CC 1	EBZh/Re/ Me	Ecology and life safety / religious studies / magician ate	KB	5	150	Exam testing
	CIK	Modern history of Kazakhstan	OK	5	150	Voice State exam
	Fil	Philosophy	OK	5	150	Exam testing
CC 1	FK	Physical education	OK	8	240	differentiated credit
	IYa	Foreign language	OK	10	300	Voice exam
CC 1	K(R)Ya	Kazakh (Russian) language	OK	10	300	Voice exam
	MK"POYa"	*Междисциплинарный курс* "Профессионально-ориентированный язык"	BK	6	180	Exam testing
CC 2	ICT	Information and communication technologies	OK	5	150	Exam testing
	Fiz	Physics	KB	5	150	Written exam
	OF	Basics of electrical engineering				
	CS	Digital circuit design	KB	5	150	Exam testing
	TEC	Electrical Circuit Theory				
	Mat	Maths	KB	5	150	Exam testing
	MA	Mathematical analysis				
CC 3	ASDP	Algorithms, data structures and programming	KB	5	150	Course project, Written exam
	JMP	Programming languages and methods				
	TP	Programming technology	KB	5	150	Exam testing
	TRP	Software Development Technologies				
	SPO	System software	KB	5	150	Exam testing
	Os	Operating Systems				
	P1CP	Programming in 1C on platform 8.3	KB	5	150	Written exam
	P1C	Programming in 1C				
	ST	Smart technology	KB	5	150	Report of Project
	MVSP	Mobile computing systems and their programming				
	OOP	Object Oriented Programming (Java)	KB	5	150	Exam testing
	IT	Internet technologies				
	PP	Educational practice		5	150	report
CC4	MMY	Models and methods of management of IT-projects	KB	5	150	Report of Project
	OKM	Basics of computer simulation				
	AMBPP	Analysis and modeling of business processes in the enterprise	KB	5	150	Written exam
	AIS	Analytical Information Systems				
	RIP	Reengineering of information processes	KB	5	150	Report of Project
	IM	Information Management				
	ITRI	IT solutions and industry 4.0	KB	5	150	Exam testing
	SII	ERP systems				
CC 5	AOKS	Computer Systems Architecture and Organization	KB	5	150	Exam testing
	TCT	Telecommunication systems and technologies				
	ST	Network technologies	KB	5	150	Written

	PST	Network Programming				exam
	KDT	Computer design technology	KB	5	150	Exam testing
	KDT	Computer design				
	RKP	Web component development	KB	5	150	Course project, Report of Project
	WP	Web - programming				
	EB	E-business	KB	5	150	Report of Project
	EK	Electronic commerce				
		Educational practice		5	150	report
CC 6	BDIS	Databases with information systems	KB	5	150	Course project, Exam testing
	ORC	Object-relational DBMS				
	BD	Big Data	KB	5	150	Exam testing
	RBDXD	Distributed Databases and Data Warehouses				
CC 7	ISCE	Information Systems in the Digital Economy	KB	5	150	Report of Project
	ITY	IT in management				
	PIS	Projecting of IS	KB	5	150	Course project, Report of Project
	TRNS	Development Technologies on Net Systems				
	SII	Artificial intelligence systems	KB	5	150	Report of Project
	IS	Intellectual systems				
	IBZI	Information Security and Information Security	KB	5	150	Written exam
	OIB	Basics of Information Security				
CC8	PP	Minor	OK	10		exam
	PP	Educational practice	OK	5		report

5 The concept of the development of the educational program

Target development indicators **OP 6B06101 "INFORMATION SYSTEMS"**

Goal 1: Improving educational activities in accordance with the requirements of the external environment	Target indicator: the functioning of the university in accordance with the basic parameters of the Bologna process	unit	In the planning period				
			Plan 2018-2019	Plan 2019-2020	Plan 2020-2021	Plan 2021-2022	Plan 2022-2023
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	high-quality academic performance of students (the proportion of students is “good and excellent”)	%	59	60	75	75	75
	the number of holders of grants of the rector, social partners, nominal scholarships	чел.	32	32	-	-	-
	the proportion of undergraduates who have settled down to work	%	75	79	79	80	80

	in the specialty in the first year after graduation						
	number of courses taught in foreign languages	шт.	4	**5**	5	7	8
Task 1.2 Creation and development of information infrastructure	number of MOOKS	шт.	3	1	1	1	1
	number of media courses developed	шт.	23	25	1	1	1
	the number of developed electronic textbooks with copyright certificate of the Ministry of Justice of the Republic of Kazakhstan	шт.	22	22	1	1	1
Task 1.3 Improving the professional level of teaching staff	the proportion of full-time faculty members with academic degrees and titles	%	53	54	55	55	55,5
	number of full-time PhD doctors	чел.	5	2	-	-	-
	number of teachers implementing major subjects in foreign languages	чел.	4	5	5	6	7
	number of faculty members with state awards, prizes, grants	чел.	1	-	-	-	-
	the number of teaching staff who have undergone advanced training	чел.	9	7	7	8	8
	number of faculty members who have completed international internships	чел.	12	1	1	1	1
	the number of faculty involved in academic mobility	чел	1	1	1	1	1
Task 1.4 Improving the qualitative composition of the contingent of students	Number of high school graduates, holders of the “Altyn Belgi” badge, certificate with honors, winners of competitions and competitions	чел.	-	-	-	1	1
	the number of graduates of KEU, who continued their studies in the magistracy	чел.	12	14	15	16	17
	number of applicants with a high level of the average grade of a school certificate	чел.	3	2	2	3	3
	the proportion of students who speak a foreign language at the intermediate level	%	7	7	7,5	8	8,5
Task 1.5 The introduction of modern forms of practical oriented training in priority areas of the State Enterprise PIID RK	the number of practitioners involved in conducting training sessions, reading elective disciplines	чел.	3	4	4	5	5
	number of graduation projects commissioned by enterprises	чел.	13	15	17	20	22
	number of graduation projects, completed. Exit classes of students on the basis of practices to potential employers by request of enterprises		65	75	80	85	90
	the number of annually concluded memorandums with leading enterprises and organizations	шт.	7	2	2	2	2
	the number of active branches of the department	шт.	4	5	6	7	8
	number of MOOKS	шт.			1		
Goal 2: Sustainable development of the University’s research activities by ensuring the effective integration of education and science	Target indicator: increasing the amount of funding for research and innovation activities of departments and research institutes of the university through external sources of funding						
Task 2.1 Enhance research university capacity	number of scientific publications of the faculty of the department	шт.	31	31	32	33	34
	the share of faculty of the department involved in the implementation of research topics	%	70	70	73	73	74
	number of scientific publications in journals with non-zero impact	шт.	3	3	3	4	4

	factor (Thomson Reuters, SCOPUS, RISC)						
	number of textbooks published under the heading of MES RK	шт.	-	1	1	-	-
	number of inventions, patents, licenses	шт.	9	1	1	1	1
Task 2.2 Creating a multi-channel research funding system	the number of scientific topics performed as a result of budget competitions of research projects	шт.	1	1	1	1	1
Problem 2.3 Integration of scientific activity and educational process	number of AtoN members	чел.	35	35	35	36	37
	the number of scientific publications of students, undergraduates and PhD students	шт.	16	16	17	18	19
	number of research and innovation projects of students, undergraduates and doctoral candidates of PhD	шт.	1	1	1	1	1
	Number of SRWS awarded diplomas and awards for participating in international contests and conferences	шт.	3	3	3	3	4
	the number of SRWS that received diplomas and awards for participating in republican competitions	шт.	4	4	4	4	4
	the number of joint publications of faculty and students, undergraduates, PhD students	шт.	7	7	9	10	10
Task 3.2 Ensuring student mobility in accordance with the requirements of the Bologna Process	Number of students participating in academic mobility programs	чел.		1	2	2	3
Task 6.1 Implementation a set of measures for the patriotic education and the formation of civic activity of youth	proportion of students involved in patriotic social events	%	85	85	86	86	87
	number of activities for patriotic education (curator hours, conferences, thematic lectures, etc.)	шт.	12	12	12	13	14
Task 6.2 Implementation of a set of measures for the formation of socially significant and individual qualities, personality traits	proportion of young people participating in various forms of student government	%	18	20	100	100	100
	participation of students in the construction and labor groups "Zhasyl el" and others.	чел.	3	3	18,5	19	19,5
	number of student members of the Alliance of Students of Kazakhstan	чел.	3		3	4	4
Problem 6.3 Implementation of a set of measures for the formation and development of a system of spiritual and moral knowledge and values	share of youth participating in public life of the university	%	55	55	56	58	59

Competencies of the educational program"Information Systems"

Cipher competencies	Content of competence	Cipher Result tata training	The content of the learning outcomes of the educational program мме
KK1.	The ability of the individual to the socio-cultural development on the basis of the formation of his ideological, civil and moral position.	PO1.	Assesses situations in various spheres of interpersonal, social and professional communication, taking into account the basic knowledge of sociology, political science, cultural studies and psychology
		PO2.	Demonstrates personal and professional competitiveness based on the formation of critical thinking, communication, creativity and willingness to collaborate

KK2.	Ability to understand and put into practice knowledge in the field of natural sciences and social sciences and humanities with international recognition	PO3.	Shows a civil position based on a deep understanding and scientific analysis of the main stages, patterns and originality of the historical development of Kazakhstan
		PO4.	Evaluates the surrounding reality on the basis of ideological positions, formed by the knowledge of the fundamentals of philosophy, which provide scientific understanding and study of the natural and social world by methods of scientific and philosophical knowledge
KK3.	Ability to physical self-improvement to ensure full social and professional activities	PO5.	Owns methods and means of physical culture
KK4.	Knowledge of languages (state, Russian, foreign) as a means of communication in all areas of activity, lexical and terminological minimum	PO6.	Has the ability to interpersonal, intercultural and professional communication, social interaction in oral and written forms in the state, Russian and foreign languages
		PO7.	Uses language and speech tools based on a system of grammatical knowledge; analyzes information in accordance with the situation of communication.
KK5.	The ability to apply quantitative methods of analysis, economic and mathematical modeling, decision support systems, intelligent systems and neural connections based on information and communication technologies when making optimal decisions in management tasks	PO8.	Applies mathematical argumentation, analytical skills, modeling theoretical and experimental research of modern software and hardware to substantiate and select the adopted solutions of applied problems in professional activities.
		PO9.	Owns the technology of collecting, processing, storing and transmitting information, as well as methods of economic and mathematical modeling, intelligent systems and neural networks based on information and communication technologies in their professional activities.
KK6.	Knowledge of methods, programming languages and programming technologies, making applications in programming languages, understanding the construction of formal languages, knowing the basic methodological programming skills, basics of the syntax and semantics of the programming language, the main directions of research in the field of operating systems, developing criticality, reflectivity professional self-organization	PO10.	Able to program in high-level algorithmic languages to solve practical problems on a computer
			Applies methods of working with the main configuration objects on the 1C platform, working with registers, building queries, managing requests, organizing operational and accounting
			Uses computer technology, programming tools for the effective implementation of hardware and software systems
			Owns the basic methodological programming skills, basic syntax and semantics of the programming language
KK7.	the ability to organize and plan, initiative and entrepreneurship, have a scientific understanding of accounting, finance, etc., use modern technical tools and information technology to solve analytical and research problems	PO11.	Able to work as ERP-and Web-programmers, managers of Internet projects, database and site administrators, system analysts
			Owns the skills and abilities of designing modern corporate systems based on Web, building high-quality, flexible and scalable systems
KK8.	ability to install, configure, administer network services of computer networks	PO12.	Able to apply practical skills in the selection of architecture and integration of information systems hardware, work with hardware and software and hardware systems of information systems in various fields of application
			Able to work with hardware and software-hardware complexes of information systems

6 Educational program approval sheet

Position	Signature	Full name
Vice-rector foracademic matters and new technologies		c.e.s., professor R.O.Bugubayeva
Director of the Department ofacademic development		c.e.s., professor M.T.Daniyarova
Dean accounting and financial faculty		c.t.s., assistant professor Serikova G.S.

* if the person is not an employee of KEUK the signature is sealed