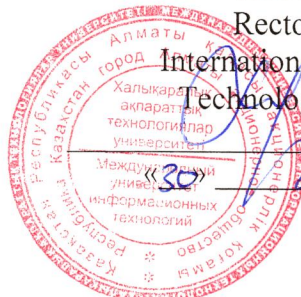


AGREED
Vice-rector for Academic and Educational
Affairs
Mustafina A.K.

«14» 03 2023 г.

APPROVED

Rector of JSC
International Information
Technology University
A.K. Khikmetov



«23» 2023 г.

EDUCATIONAL PROGRAM

6B06104 «Business analysis»

(based on prof. standard "Creation and management of information technologies" and the International Standard ACM)

Code and classification of the field of education: 6B06 – Information and communication technologies

Code and classification of training areas: 6B061 - Information and communication technologies

Group of educational programs: 057 – Information Technology

Standard level ISCE: 6

Standard level NQF: 6

Standard level SFQ: 6

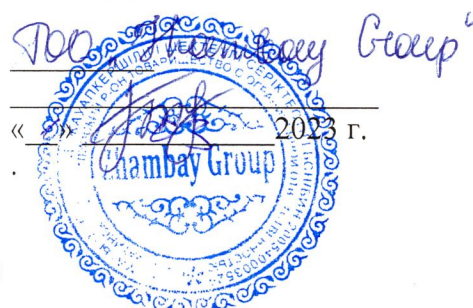
Study period: 4 years

Number of credits: 240

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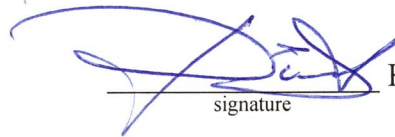
AGREED



Almaty, 2023

The educational program 6B06104 «Business analysis» is the main academic document of the university for training personnel in the direction of 6B06 – Information and communication technologies. This educational program was discussed and approved at the meeting of the department " _____ " dated "___" _____ 2023 Protocol № _____

Acting Head of the Department



signature

Kozhamzharova D.Kh.

This educational program was reviewed and approved at a meeting of the University Scientific Council dated _____, 2023 Protocol № _____

Manager of the Department

signature

Ajibaeva A. Sh.

for Educational and Methodological Affairs

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List of abbreviations and designations

BC	Basic competence
BM	Basic module
HE	Higher education
SMSE	State mandatory standard of education
EQF	European Qualification Framework
EEF	European Education Foundation
KAS	Knowledge, abilities, skills
NKZ	National Classifier of Occupations
NQF	National Qualifications Framework
NQS	National Qualifications System
GHM	General humanitarian module
GM	General module
EP	Educational program
GPM	General professional module
SQF	Sectoral Qualifications Framework
GEC	General education competence
PS	Professional Standard
PGE	Postgraduate Education
PC	Professional competence
PM	Professional module
WG	Working Group
RK	Republic of Kazakhstan
LO	Learning Outcome
SM	Special module
QMS	Quality management system
SEM	Socio-economic module
TVE	Technical and Vocational Education
TVET	Technical and Vocational Education and Post-Secondary education
UNESCO	United Nations Educational, Scientific and Cultural Organization/ is a specialized agency of the United Nations Educational, Scientific and Cultural Affairs.
Cedefop	European Centre for the Development of Vocational Training DACUM from English Developing Curriculum
ECVET	European Credit System for vocational education and training
EQAVET	European Quality Assurance in Vocational Education and Training
ENQA	European Association for Quality Assurance in Higher Education / European - Russian Association for Quality Assurance in Higher Education
ESG	Standards and Guidelines for Quality Assurance in the European Higher Education Area
FIBAA	International agency (non-profit foundation) for accreditation and examination of the quality of higher education (Bonn, Germany)
IQM-HE	Internal Quality Management in Higher Education
TACIS	Technical Assistance for the Commonwealth of Independent States
WSI	WorldSkills International

1. Description of the educational program

Modern business conditions, characterized by the instability of the economic environment and increasing fierce competition, place increased demands on the efficiency and quality of decisions made at all levels of enterprise or organization management.

Decision support involves the possession of up-to-date comprehensive information about the state and trends of business development using business intelligence methods and tools. At the same time, the amount of information that needs to be taken into account to form optimal informed decisions is steadily growing.

This leads to a situation where it becomes impossible to effectively manage a company without the use of modern means of information support, namely, methods and tools for automating business analysis. These business intelligence technologies, which enable organizations to turn accumulated data into business information, and then information into knowledge for business management, are combined under the term Business Intelligence or BI solutions.

Business analysis in this educational program is considered as a modern trend of identifying business needs and finding solutions to business problems. Solutions often include a systems development component, but may also consist of process improvements, organizational changes, or strategic planning and policy development. A business analyst is a specialist who uses business analysis methods to study the needs of organizations in order to identify business problems and propose solutions to them.

The classical scheme of analyst training does not meet these challenges, since it does not systematically cover additional tasks of data processing and analysis, including unstructured data of large volumes. At the same time, there is an obvious shortage of specialists who are ready to systematically approach solving problems related specifically to the methodology of data processing of various types and types, ordering access to data warehouses, restructuring the structure of storage, efficiency of processing processes, analysis of big data (requiring dimensionality reduction, specific schemes for conducting statistical experiments, approximate methods, effective algorithms), etc.

The educational program "Business Analysis" includes the selection and planning of approaches to conducting business analysis of business processes or ICT projects of the organization, determining the business needs of the organization, determining business cases; assessing organizational readiness for changes in business processes or ICT projects of the organization, the effectiveness of solutions, the effectiveness of business analysis management business processes; planning of communications, requirements management processes, analysis of business processes or ICT projects of the organization, optimization of business processes or ICT projects of the organization.

After graduation, you will have the ability to analyze the information received in the field of business analysis and information and analytical support for making operational, tactical and strategic management decisions necessary to ensure the long-term development of the company.

The meetings held by the marketing service of the IIT and the analysis of surveys conducted among graduates of niches, physics and mathematics schools showed that about 35% of graduates are seriously thinking about the profession of "business analyst".

The educational program "Business Analysis" includes the selection and planning of approaches to conducting business analysis of business processes and / or ICT projects of the organization, determining the business needs of the organization, determining business cases for business processes and / or ICT projects of the organization, determining the requirements for business processes and/or to the organization's ICT projects, preparation of packages of requirements for the organization's business processes and/or for ICT projects, preparation of plans for business analysis of business processes and/or ICT projects of the organization, establishment and modeling of requirements for business processes and / or ICT projects of the organization, participation in the development of technical specifications for the development of IP, assessment of organizational readiness for changes in business processes and / or ICT projects of the organization, evaluation of the effectiveness of solutions to improve business processes and / or ICT projects of the organization, evaluation of efficiency management of business analysis of business processes and/or ICT projects of the organization, planning of communications, management processes of requirements for business processes and/or for ICT projects of the organization, analysis of the results of interviewing stakeholders for conducting business analysis of

business processes and/or ICT projects of the organization, analysis of business processes and/or ICT projects of the organization, analysis of approaches to business planning of business processes of the organization and/or ICT projects, development of demonstration materials necessary for presentations on improving business processes and/or ICT projects of the organization, development of recommendations for the introduction of new technologies for optimizing business processes and/or ICT projects of the organization, formation of recommendations on optimization of business processes and/or ICT projects of the organization.

2. Purpose and objectives of the educational program

The purpose (goals) of the Bachelor's degree program to prepare specialists capable of developing and applying modern methodologies and technologies for data analysis and management decision-making.

The objectives (tasks) of the BA educational program are to develop:

1. Prepare a universal specialist who has knowledge in mathematics, statistics, ICT, computer science, business and economics.
2. To teach students the methods of studying large data sets containing disparate information, for example, market trends, customer preferences, etc.
3. Develop the ability to extract the necessary information from various sources, including information flows in real time, analyze it for further business decision-making and see logical connections in the system of collected information and on the basis of this develop certain business solutions, models.
4. The student should know the methodology of research in the field of data science (setting research goals, data collection, data processing and transformation, data survey, model building and method selection, presentation and visualization of results), methods and approaches to standardization and data transformation, machine learning methods (basic classification and clustering methods), methods of organizing data storage.
5. The student should be able to solve applied problems of data processing and analysis in order to identify hidden dependencies in them, apply elements of probability theory and mathematical statistics underlying models and methods of data science, correctly select machine learning methods for solving practical problems, organize the working environment of a researcher in the field of data science (Jupyter), use packages and libraries for machine learning (Matplotlib, SciPy/NumPy, Pandas, Scikit-learn).
6. The student must have the skills to work with tools for organizing data storage, the skills of software implementation of data processing and analysis tools, the skills of data preprocessing and visualization;
7. The student must possess the skills of complex analysis and analytical generalization of the results of research works using modern achievements of science and technology, the skills of independent data collection, study, analysis and generalization of scientific and technical information on the subject of research, the ability to create theoretical models that allow predicting the properties of the objects under study, and develop proposals for the implementation of the results.

3. Requirements for the evaluation of learning outcomes of the educational program

The following forms of exams are used as an assessment of learning outcomes: computer testing, written exam (answers on sheets), oral exam, project (passing a course project), practical (open questions on a computer, solving problems on a computer, including in ACM format), complex (test /written / oral+ etc). In accordance with table 1, the following ratio of exam forms is recommended:

Table 1

№	Exam form	Recommended share, %
1	Computer testing	20%
2	Written	10%
3	Oral	5%
4	Project	30%
5	Practical	30%
6	Complex	5%

The final certification ends with the defense of the diploma project.

4 Passport of the educational program

4.1 General information

№	Field name	Note
1	Code and classification of the field of education	6B06 – Information and communication technologies
2	Code and classification of training direction	6B061–Information and communication technologies
3	Group of educational programs	057 – Information technology
4	Name of the educational program	6B06104 «Business Analysis»
5	Brief description of the educational program	The educational program "Business Analysis" includes the selection and planning of approaches to conducting business analysis of business processes and / or ICT projects of the organization, determining the business needs of the organization, determining business cases for business processes and / or ICT projects of the organization, determining the requirements for business processes and/or to the organization's ICT projects, preparation of packages of requirements for the organization's business processes and/or for ICT projects, preparation of plans for business analysis of business processes and/or ICT projects of the organization, establishment and modeling of requirements for business processes and / or ICT projects of the organization, participation in the development of technical specifications for the development of IP, assessment of organizational readiness for changes in business processes and / or ICT projects of the organization, evaluation of the effectiveness of solutions to improve business processes and / or ICT projects of the organization, evaluation of efficiency management of business analysis of business processes and/or ICT projects of the organization, planning of communications, management processes of requirements for business processes and/or for ICT projects of the organization, analysis of the results of interviewing stakeholders for conducting business analysis of business

		processes and/or ICT projects of the organization, analysis of business processes and/or ICT projects of the organization, analysis of approaches to business planning of business processes of the organization and/or ICT projects, development of demonstration materials necessary for presentations on improving business processes and/or ICT projects of the organization, development of recommendations for the introduction of new technologies for optimizing business processes and/or ICT projects of the organization, formation of recommendations on optimization of business processes and/or ICT projects of the organization.
6	Purpose of the EP	To train specialists capable of developing and applying modern methodologies and technologies for data analysis and management decision-making.
7	Standard level ISCE	6
8	Standard level NQF	6
9	Standard level SFQ	6

1 0	<p>List of competencies of the educational program:</p> <p>GC1: To know: socio-ethical values based on public opinion, traditions, customs, social norms and focus on them in their professional activities; traditions and culture of the peoples of Kazakhstan; human and civil rights and freedoms; fundamentals of the legal system and legislation of Kazakhstan; trends in social development of society; fundamentals of physical culture and principles of healthy a person's lifestyle.</p> <p>GC2: Have an idea of: ethical and spiritual values; about sociological approaches to personality, basic laws and forms of regulation of social behavior; about the essence of power and political life, political relations and processes, about the role of political systems in the life of society and various social groups; about the role of consciousness and self-awareness in behavior, communication and activity people, the formation and formation of personality.</p> <p>GC3: The ability to possess: ethical and legal norms of behavior; a system of practical knowledge and skills that ensure the acquisition, development, improvement and activation of psychophysical abilities and qualities, the acquisition, preservation and strengthening of health, the ability to work in a team, correctly defend their point of view, offer new solutions.</p> <p>GC 4: Ability for written and oral communication in the state language and the language of interethnic communication; ability to logically correctly, argumentatively and clearly build oral and written speech; readiness to use one of the foreign languages.</p> <p>GC5: The ability to use modern information technologies, manage information using business applications; use network computer technologies, databases and application packages in their subject area</p> <p>BC1: The ability to actually use the state language, the language of interethnic communication and a foreign language in professional activities.</p> <p>BC2: The ability to understand the basics of economic knowledge, ideas about finance and economics.</p> <p>BC3: The ability to professionally operate modern equipment, appliances, network components, computer systems (in accordance with the objectives of the program), as well as to use safety regulations, industrial sanitation, fire safety and occupational safety standards.</p> <p>BC 4: The ability to have the skills to use algorithms and programs to calculate the parameters of business processes.</p> <p>BC 5: The ability to use the basic provisions and methods for solving management tasks, the ability to perform project documentation in a computer graphics software environment for various types of projects.</p> <p>BC 6: Ability to understand business analysis models and business process modeling methods; use business modeling methods and tools; conduct business process modeling for business analysis.</p> <p>BC4: The ability to have the skills to use algorithms and programs.</p> <p>BC5: The ability to be competent in choosing mathematical modeling methods for solving specific engineering problems, such as the design of IT infrastructure and its implementation, research and analysis of software requirements, software design, resource management of automated systems, creation (modification) of web resources, development of technical documents, creation and editing of information resources and others, including the willingness to identify the scientific nature of the problems arising in the course of professional activity, and the ability to attract the appropriate physical and mathematical apparatus to solve it.</p>
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	<p>BC6: The ability to independently acquire new knowledge and skills with the help of information technology and use them in practice, including in new areas of knowledge that are not directly related to the field of activity.</p> <p>BC7: The ability to determine the business needs of an organization; identify and collect requirements necessary for business analysis of processes or ICT projects of an organization; determine business goals and business requirements for business processes or for ICT projects of an organization; document requirements for business processes or for ICT projects of an organization.</p> <p>BC8: The ability to carry out system analysis, modeling, design and construction of IS; to build information applications using modern tools, to analyze, model and design IS in various hardware platforms; to analyze the subject area and determine the tasks for which it is advisable to use modern technologies;</p> <p>PC1: The ability to understand how companies can gain competitive advantages through data mining;</p> <p>PC2: The ability to describe when and how to apply various data mining methods to understand the basic process and mechanics of data mining;</p> <p>PC3: The ability to make strategic recommendations based on the results of data mining;</p> <p>PK4: The ability to conduct system analysis, modeling, analyze the design and construction of IS; to build information applications using modern tools;</p> <p>PK5: The ability to analyze the goals and interests of project stakeholders; determine the goals, subject area and structures of the project; calculate the calendar plan for the implementation of the project; form the main sections of the consolidated project plan.</p> <p>PK6: The ability to analyze project risks; to select software tools for solving the main tasks of project management.</p> <p>PK7: The ability to build business process infrastructures (BPI); understand the basic principles and prerequisites for the use of reengineering technologies in business; understand the principles and methods of analysis and optimization of BP.</p>		
1 1	<p>Learning outcomes of the educational program:</p> <p>LO 1: To argue the choice of basic standards, principles and design patterns, methods, tools and programming languages, including choosing methods and means of building information security systems of modern ICT</p> <p>LO 2: To compile and/or apply mathematical models and methods of various processes</p> <p>LO 3: Design database, software and information systems architectures</p> <p>LO 4: Design and develop ergonomic user interfaces</p> <p>LO 5: Develop and/or use software, hardware, information, mathematical, functional support of information systems, including algorithms and methods of information security</p> <p>LO 6: To show sociability, initiative and psychological readiness for work, including when working in a team and to make managerial and technical decisions</p> <p>LO 7: Understand the key concepts to create a comprehensive data management strategy for a large organization that provides its operational and analytical financial and accounting needs for efficiency and reliability;</p> <p>LO 8: To analyze the subject area and determine the tasks for which it is advisable to use modern technologies;</p> <p>LO 9: Link, import, generate and transform data for business intelligence;</p> <p>LO 10: Analyze the goals and interests of project stakeholders;</p> <p>LO 11: To develop communication skills that allow effective interaction with stakeholders, develop a strategy and find alternative options in conditions of uncertainty.</p> <p>LO 12: Is able to apply the acquired knowledge according to the selected additional educational program</p>		
1	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Form of study</td> <td style="width: 50%;">full-time</td> </tr> </table>	Form of study	full-time
Form of study	full-time		

2		
1 3	Language of instruction	English
1 4	Volume of loans	240
1 5	Awarded Academic Degree	«Bachelor of Information and Communication Technology» in the educational program 6B06104 – «Business analysis»
1 6	Developer(s) and authors:	JSC "International University of Information Technologies", Department of Information Systems:

1 7		<p>JSC "International University of Information Technologies", Department of Information Systems:</p> <ul style="list-style-type: none"> - PhD, associate professor Rakhmetulayeva Sabina Batyrkhanova. - McS, Kulbayeva Aliya Kayratovna
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4.2 Matrix of correlating the learning outcomes of the educational program as a whole with the competencies being formed

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12
BC1						V					V	
BC2						V		V				
BC3	V		V	V								
BC4		V	V		V							
BC5			V	V								
BC6		V			V							
BC7	V							V				
BC8	V		V	V	V							
PC1							V	V	V			V
PC2							V		V			V
PC3					V							V
PC4			V	V	V		V	V		V		V
PC5							V		V	V		V
PC6							V		V	V		V
PC7						V		V	V			V

4.3 Information about modules / disciplines (if there are modules, it is necessary to highlight)

№	Name of the discipline	Brief description of the discipline (30-50 words)	Number of credits	Formed competencies (codes)	Prerequisites
Cycle of general education disciplines					
Required component					
1	History of Kazakhstan	The course examines the modern history of Kazakhstan as part of the history of mankind, the history of Eurasia and Central Asia. The modern history of Kazakhstan is a period in which a holistic study of historical events, phenomena, facts, processes is carried out, revealing historical patterns that took place on the territory of the Great Steppe in the twentieth century and up to the present day.	5	GC1	No
3	Philosophy	The object of study of the course is philosophy as a special form of spiritual studies in its cultural and historical development and modern sound. The main directions and problems of world and domestic philosophy are studied. Philosophy is a special form of cognition of the world, creating a system of cognition of the general principles and foundations of human life, about the essential characteristics of a person's attitude to nature, society and spiritual life, in all its main direction.	5	GC1, GC2	History of Kazakhstan
4	Foreign language	The course includes an intensive English language learning program focused on grammar and conversational skills. The course includes topics reflecting the latest achievements in the field of information technology, and the terminology dictionary makes them directly relevant to the needs of students.	10	GC4	No
5	Kazakh (Russian) language	The course occupies a special place in the system of training bachelors with engineering education. For students of a technical university, studying professional Kazakh/Russian languages is not only improving the skills and abilities acquired at school, but also a means of mastering a future specialty.	10	GC4	No
3	Information and communication technologies	In the course, information and communication technologies are considered as modern methods and means of communication of people in ordinary and professional activities with the help of information technologies for the search, collection, storage, processing and dissemination of information.	5	GC5	No
6	Political Science	The course is dedicated to general political knowledge for specialties in the field of ICT. It includes political self-awareness, improvement of one's political outlook and communicative competencies. The teaching of political knowledge is communicative, interactive, student-oriented, result-oriented and largely depends on the independent work of students.	2	GC2	No

4.3 Information about modules / disciplines (if there are modules, it is necessary to highlight)

№	Name of the discipline	Brief description of the discipline (30-50 words)	Number of credits	Formed competencies (codes)	Prerequisites
Cycle of general education disciplines Required component					
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3	Philosophy	The object of study of the course is philosophy as a special form of spiritual studies in its cultural and historical development and modern sound. The main directions and problems of world and domestic philosophy are studied. Philosophy is a special form of cognition of the world, creating a system of cognition of the general principles and foundations of human life, about the essential characteristics of a person's attitude to nature, society and spiritual life, in all its main direction.	5	GC1, GC2	History of Kazakhstan
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5	Kazakh (Russian) language	The course occupies a special place in the system of training bachelors with engineering education. For students of a technical university, studying professional Kazakh/Russian languages is not only improving the skills and abilities acquired at school, but also a means of mastering a future specialty.	10	GC4	No
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6	Political Science	The course is dedicated to general political knowledge for specialties in the field of ICT. It includes political self-awareness, improvement of one's political outlook and communicative competencies. The teaching of political knowledge is communicative, interactive, student-oriented, result-oriented and largely depends on the independent work of students.	2	GC2	No

		future profession or specialty.			
1 4	Physics	The study of the laws, principles, postulates and equations of mechanics, molecular physics and thermodynamics, electricity and magnetism, the equations of ray optics, quantum optics, the use of physics equations to solve specific physical problems, the use of physics methods for research, analysis and laboratory work in order to check the work and fulfillment of the laws of physics in nature and technology.	4	BC 3, BC 6	No
1 5	Algebra and Geomet ry	The course aims to familiarize students with important sections of linear algebra and analytical geometry. During the educational process, students should become familiar with and be able to apply algebraic and geometric methods and tools for solving various applied problems with such important concepts as matrices, determinants, matrix rank, vectors, lines, planes, linear and Euclidean space, linear transformations and quadratic forms.	4	BC6	No
1 6	Probability theory and mathematica l statistics	The course is devoted to the probability and statistics of any events, as well as the relationship between mathematics and programming, operating systems within the framework of an interdisciplinary training program covering the section of mathematical analysis, modern statistical methods and economic theory.	6	BC 6	Algebra and Geomet ry
1 7	Mathematical analysis	The purpose of the course is to familiarize students with important branches of calculus and its applications in computer science. During the educational process, students should familiarize themselves and be able to apply mathematical methods and tools to solve various applied problems. Moreover, they study fundamental methods of studying infinitesimal variables using analysis, which is based on the theory of differential and integral calculations.	6	BC 6	Algebra and Geomet ry
1 8	Discrete mathematics	Discrete mathematics is a part of mathematics devoted to the study of discrete objects (here discrete means consisting of separate or unrelated elements). More generally, discrete mathematics is used whenever objects are counted, when relationships between finite (or countable) sets are studied, and when processes involving a finite number of steps are analyzed. The main reason for the growing importance of discrete mathematics is that information is stored and processed by computing machines in a discrete way.	6	BC 6	No
1 9	Algorithms and data structures	The discipline "Algorithms and data structures" involves the study of ways to represent algorithms and programs, methods of algorithm development, features of the technological process of program development, program documentation.	5	BC 4,P C 2	No

20	IT Product Management	This course provides students with a comprehensive overview of the principles, processes and methods of software product management. Students study methods of planning, organizing, scheduling and controlling software projects. Students will gain practical skills and competencies in the field of product management related to the definition of a software project, the establishment of project communications, project change management and management of distributed software teams and projects.	4	BC 2, BC 5, PC 3	No
21	Introduction to Web Development	This course covers the basics of website development using HTML, Cascading Style Sheets (CSS), JavaScript and jQuery.	6	BC 8	No
22	Object-oriented programming	The course includes: Encapsulation, inheritance, polymorphism. Creating classes. Creating useful client applets and standalone applications based on real requirements that students receive from real clients or employers.	5	BC 8	Introduction to Programming
23	English for STEAM	The course is designed to help students develop their English language skills for their current and future academic studies. Improving the level of grammatical accuracy and developing listening, reading, writing and speaking skills in the IELTS format.	4	GC 4, BC 1	Foreign language
24	Introduction to Programming	The course is designed to study algorithms and develop programs for solving various tasks. For this purpose, the program structure, the principles of constructing algorithms and programs, methods of solving problems, algorithmization, debugging programs and implementing programs using the C++ language are considered.	6	BC4	No
25	Educational practice	The practice includes detailing the finishing blocks of the generalized scheme, identifying the necessary classes and methods, defining sets of logically interconnected data (data streams), introducing various additional tools to ensure visibility and increase the level of service of the designed program, developing a generalized algorithm scheme, developing and debugging a program implementing the designed model.	2	BC4	Introduction to Programming

2 6	Enterprise architecture	The course assumes a controlled set of techniques describing the information model of the enterprise and including: Databases and data warehouses; information flows (both within the organization and communication with the outside world).	5	B C5 , B C6 , PC 1	No
Cycle of basic disciplines					
Elective component					
2 7	Computer Networks (Cisco)	The course explores network communications from local area networks (LAN) to the global Internet. Standard problems and a number of solutions for each of them are considered, with special emphasis on the TCP/IP protocol suite. In addition, it will prepare students for real information security operations. Knowledge of the basics of working with networks will refresh students with attention to the problems faced by modern infrastructure.	5	BC3	Physics
2 8	Data and information management	The course explains what a database system is, and then proceeds to most of the training material for studying relational database systems - databases designed according to a relational (or tabular) model. Then the course moves from data abstraction to transaction management with additional materials to improve query performance. Finally, modern trends in the design of database systems have emerged, which also determine the latest developments in the broader history of data storage technologies.	7	BC7	Object-oriented programming
2 9	Information security and information protection	The course is centered around the main topic of security, which introduces students to the main security topics that arise during the design, analysis and implementation of network and distributed systems. Supporting topics allow students to explore broader areas in which they can apply their newly acquired skills.	5	BC6	Information and communication technologies
3 0	WEB programming	The course continues web development using PHP, JavaScript and other web technologies when programming information web systems. The course introduces advanced web design techniques. Topics include customer expectations, advanced markup language, multimedia technologies, practicality and accessibility, as well as methods for evaluating web design.	6	BC6	Basics of Web development
3 1	Legal aspects of ICT	This course introduces students to the methodology of reading legal texts: from articles to contracts, constitutions, legislation and cases in the field of information technology. It also provides an overview of the structure and hierarchical form of most domestic legal systems and their relationship to international law and organizations. The course covers the basic methods of legal research, writing and analysis. Issues of copyright and legal support of intellectual property.	4	GC3 BC3	No

3 2	Operating systems	This course will provide an introduction to the design and implementation of an operating system. The course will begin with a brief historical overview of the development of operating systems over the past fifty years, and then cover the main components of most operating systems. This discussion will cover the trade-offs that can be made between performance and functionality during the design and implementation of an operating system. Special attention will be paid to three main OS subsystems: process management (processes, threads, CPU scheduling, synchronization and deadlocks), memory management (segmentation, pagination, paging), file systems and operating system support for distributed systems. Bash language proficiency, network management, network security.	5	BC6	Information and communication technologies
3 3	Human-computer interaction	This course combines a component that teaches programming of interactive user interfaces with a component that teaches methods to improve the usability of these interfaces. The course proceeds from the fact that the usability of the interface is important for successful software design, and not just as "packaging" or aesthetics.	5	BC6	Information and communication technologies
3 4	Fundamentals of information systems	This course is devoted to the full life cycle of information systems development, starting from the description of the idea, the development of specifications of the terms of reference, modeling, development, testing, debugging software, calculating the feasibility study of the cost of developing an information system, ending with a presentation for the customer. The course also covers theoretical and practical issues of building and functioning of IP, namely IP classification, UML modeling, ADO technology, criteria for evaluating IT projects, etc.	5	PC4	No
3 5	Business Analysis Fundamentals	The course explains what a database system is and then moves on to most of the study material for studying relational database systems - databases designed according to the relational (or tabular) model. The course then moves from data abstraction to transaction management with additional material on improving query performance. Finally, there are current trends in database system design that also define the latest developments in the broader history of data storage technology.	4	BC6	Human-computer interaction
3 6	IT-infrastructure	This course focuses on information technology infrastructure in a business environment, including inter-network data exchange and distributed data processing. The topics covered include business requirements for distributed systems, system architecture models (client/server; distributed processing, etc.). Key network models and technologies, security issues related to architecture, design and technology, network configuration and management methods.	5	BC3, PC4	Computer networks, Information security and information protection

3 7	System analysis and design	The course allows you to gain knowledge of the basic principles and approaches of system analysis and design, allowing you to explore complex information systems; the ability to apply the knowledge gained for the system analysis of business processes; knowledge of the methods of applying modern tools of system analysis and design of business processes.	3	BC 5, PC 4	Business Analysis Fundamentals, Object-oriented programming
Cycle of profile disciplines University component/Component of choice (Elective component)					
3 8	Industrial practice	The practice includes the study of the organizational structure and the complex of technical means of the information and analytical center (IAC) of the organization. Identification of the main tasks solved by the IAC. Study of the information support of the selected task (complex of tasks or subsystem). Study of the mathematical support of the selected task (complex of tasks or subsystem). Study of the software of the selected task (complex of tasks or subsystem). Study of the organizational and legal support of the selected task (a set of tasks or a subsystem). systematization and analysis of factual materials necessary for writing a term paper, a scientific report and an internship report.	8	BC 5, BC 6	No
3 9	Pre-graduate practice	The practice includes the consolidation of theoretical knowledge in the academic disciplines of the specialty; mastering practical skills, technology of work in the specialty directly at the workplace using a PC, modern software and modern office equipment; studying and analyzing the real situation in the statics and dynamics of CAD in the short and long term in relation to the enterprise – the basis of practical training; evaluation of the commercial results achieved implementation of automation in the short and long term, in relation to these specific enterprises; familiarization with CAD development techniques and technology, procedures for making and implementing automation solutions at specific enterprises; collecting material for graduation projects.	5	BC 5, BC 6	No
4 0	Elective course - 1.1 (Major)		5	PC2-4	
4 1	Business Process Modeling and Analysis (BA-1)	The content of the discipline covers an introduction to systems analysis, the systems development life cycle, human interface design, universal design principles, software testing, types of software testing, system documentation			Business Analysis Fundamentals
4 2	Design Templates (ISD-1)	Mastering patterns and knowledge to describe the problems that occur when writing object-oriented code, as well as the skills to solve these problems. Practical skills in using patterns and at the same time expand your knowledge of OOP.	5	PC2	Object-oriented programming

4 3	Elective course - 1.2 (Major)		5	PC2	
4 4	Business Analysis Workbench (BA-2)	The content of the discipline covers a range of issues related to the activities of a business analyst: description of requirements for software development, description of business processes, communication with stakeholders, documentation.			Business Process Modeling and Analysis (BA-1)
4 5	Development of Web components on the Java EE platform (ISD-2)	This course prepares students for OCPJWCD certification (Oracle Certified Professional Level Professional: Developer of Web Components for the Java EE 5 platform), which assumes basic knowledge about the development of Java components (servlets and JSP pages) used in web applications.	5	PC2	Design Templates (ISD-1)
4 6	Elective course - 2.1 (Minor 1)	Additional educational program (minor) - a set of disciplines and (or) modules and other types of educational work, determined by students for study in order to form additional competencies	5	PC1, PC7	
4 7	Elective course - 1.3 (Major)		5	PC4	
4 8	Change Management in Business Analysis (BA-3)	Every modern enterprise has to constantly improve its activities. The approach to managing an organization as a management of functionally separated departments is currently not effective. Today enterprises need a transition to a modern process-oriented management system and comprehensive application of advanced methods and software products for business process management. Modeling of business processes provides an opportunity to analyze and improve the activities of the enterprise as a whole and in the workplace, its interaction with external organizations, customers and suppliers.		PC4, PC7	
4 9	Development of web application based on the Spring Framework (ISD-3)	This course prepares students to use frameworks that have two main functions: working on the server side (backend) and working on the client side (frontend). Prepare them for the development of Frontend frameworks related to the external part of the application, responsible for the appearance of the application. And the development of the Backend, which is responsible for the internal structure of the application.	5	PK2	Development of Web components on the Java EE platform (ISD-2)
5 0	Elective course - 2.2 (Minor 2)	Additional educational program (minor) - a set of disciplines and (or) modules and other types of educational work, determined by students for study in order to form additional competencies	5	PC1-PC7	
5 1	Elective course - 1.4 (Major)		5	PC4	
5 2	Innovation Management (BA-4)	The content of the discipline covers a range of issues related to the concept of the innovation process, the study of components, including innovation management, the definition of factors for success in innovation, factors for managing uncertainty, various forms of protection of intellectual property, understanding of the patent, patent components, different ways to manage innovation, such as alliances, open innovation.	5	PC6	

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5 3	Development of web services on the Java EE platform (ISD-4)	The course will prepare developers of applications and services on the Java EE platform: development of scalable Servlet applications, Web Services, Rest services; writing a user interface using JSF; analysis of web application performance problems. The use of JavaServer Faces in the development of Web applications, JSF Component Libraries, Interaction with databases via the Java Persistence API.	5	PC6	Development of Web components on the Java EE platform (ISD-2)
5 4	Elective course - 1.5 (Major)		5	PC5, PC7	
5 5	Optimization of Business Processes (BA-5)	The course includes: Introduction to business analysis methodologies. Identifying the drivers behind the development of Scrum and Agile. The main concepts of Agile. Understanding the needs. Agile Manifesto Manifesto for Agile Software Development. Elements and terminology of the Scrum methodology. Project Initiative. Scrum teams and team space. Scrum planning. Sprints. Other Agile Principles and Best Practices.	5	PC5, PC7	
5 6	Elective course - 2.3 (Minor 3)	Additional educational program (minor) - a set of disciplines and (or) modules and other types of educational work, determined by students for study in order to form additional competencies	5	PC1-PC6	

5. Curriculum of the educational program

№	Код дисциплины	Наименование дисциплины (рус)	Наименование дисциплины (каз)	Наименование дисциплины (англ)	Всего кредитов	Семестр	Форма контроля	Всего объем учебной нагрузки	в том числе				СРО	Распределение кредитов по курсам и семестрам														
									аудиотипы	лекции	лабораторные	практические		СРО			1 курс			2 курс			3 курс			4 курс		
														15	15	15	15	15	15	15	15	15	15	15	15			
																										1	2	3
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22							

1.1 Обязательные дисциплины (ООД) - 56 кредитов

1.1 Обязательный компонент - 51 кредита																								
1.1 Обязательный компонент - 51 кредита																								
ООД 1	НК6002	История Казахстана	Қазақстан тарихы	History of Kazakhstan	5	3	тест	150	60	15	30	90	15	5										
ООД 2	SPS6001	Философия	Философия	Philosophy	5	4	тест	150	60	15	30	90	15	5										
ООД 3	LAN6001A	Иностранный язык	Шет тілі	Foreign language	5	1	комп лекс	150	60		45	90	15	5										
ООД 4	LAN6002A	Иностранный язык	Шет тілі	Foreign language	5	2	комп лекс	150	60		45	90	15	5		5								
ООД 5	LAN6001KR	Казахский (русский) язык	Қазақ (орыс) тілі	Kazakh (Russian) language	5	1	комп лекс	150	60		45	90	15	5										
ООД 6	LAN6002KR	Казахский (русский) язык	Қазақ (орыс) тілі	Kazakh (Russian) language	5	2	комп лекс	150	60		45	90	15	5										
ООД 7	ICT6001	Информационные технологии	Ақпараттық коммуникациялық технологиялар	Information and Communication Technologies	5	1	тест	150	60	15	30	90	15	5										

ООД 8	SPS6003	Политология	Саясаттану	Political science	2	2	письм	60	30	15	15	15	15	15	15	15	0	0	0	0	0
ООД 9	SPS6002	Социология	Әлеуметтану	Sociology	2	2	письм	60	30	15	15	15	15	15	15	2					
ООД 10	SPS6005	Психология	Психология	Psychology	2	3	письм	60	30	15	15	15	15	15	2						
ООД 11	SPS6004	Культурология	Мәдениеттану	Culturology	2	3	письм	60	30	15	15	15	15	2							
ООД 12	PhC6005 PhC6006	Физическая культура	Дене шынықтыру	Physical Culture	8	2,3	зачет	240	0		90	120	30	4	4						
		Итого:			51			1530	540	105	390	810	195	15	18	13	5	0	0	0	0

1.2 Вузовский компонент - 5 кредитов

ООД 13	SFT6125	Зеленые технологии и экономика	Жасыл технологиялар және экономика	Green technology and economics	5	8	проект	150	30	15	30	90	15								5
2 БД		Итого:			5			150	30	15	30	90	15	0	0	0	0	0	0	0	5

2 Базовые дисциплины (БД) - 123 кредитов

2.1 ОК																					
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2.1 Вузовский компонент - 64 кредитов

БД 1	LAN6007К	Делопроизводство на государственном языке	Мемлекеттік тілде іс қағаздарын жүргізу	Business correspondence in the state language	3	3	комплекс	90	45		30	45	15								
БД 2	LAN6003РА	Профессионально-ориентированный иностранный язык	Кәсіби-бағытталған шет тілі	Professionally-oriented foreign language	3	4	комплекс	90	45		30	45	15			3					
БД 3	PHU6001	Физика	Физика	Physics	4	2	письм	120	60	15	30	60	15		4						
БД 4	MAT6001	Алгебра и геометрия	Алгебра және геометрия	Algebra & Geometry	4	1	письм	120	45	15	30	60	15	4							

БД 5	МАТ6004	Теория вероятностей и математическая статистика	Ықтималдық және математикалық статистика	Probability Theory and Mathematical Statistics	6	4	письм	180	75	30	30	105	15	6						
БД 6	МАТ 2206	Математический анализ	Математикалық талдау	Mathematical Analysis	6	2	письм	180	75	30	30	105	15	6						
БД 7	МАТ6003	Дискретная математика	Дискреттік математика	Discrete Mathematics	6	3	письм	180	75	30	30	105	15	6						
БД 8	SFT6001	Введение в программирование	Бағдарламалар ағуға кіріспе	Introduction to Programming	6	1	тест	180	60	15	30	105	15	6						
БД 9	IS6124	Алгоритмы и структуры данных	Алгоритмдер және деректер құрылымдары	Algorithms & Data Structures	5	4	проект	150	60	15	30	90	15							
БД 10	PM6102	Управление ИТ-продуктами	ИТ-өнімдерін басқару	IT-product Management	4	7	проект	120	60	15	30	60	15						4	
БД 11	SFT6101	Основы Web-разработки	Web әзірлемелер негіздері	Introduction to Web Development	6	3	проект	180	60	15	30	105	15							
БД 12	SFT 6002	Объектно-ориентированное программирование	Объекті-бағдарланған бағдарламалар ағу	Object-Oriented Programming	5	4	практика	150	60	15	30	90	15							
БД 13	LAN6002DA	Английский язык для STEM	STEM үшін шет тіл	Foreign language for STEM	4	3	комплекс	120	60			60	15							
БД 14	PP6101	Учебная практика	Оқу тәжірибесі	Teaching practice	2	2	проект	60	45			15	15							
		Итого:			64			1920	825	195	180	1050	210	10	12	19	0	0	4	0

2.2 Компонент по выбору - 59 кредитов															
2.2 КВ-БД	Управлении данными и информацией	Деректер мен апаратты басқару	Data and information management	7	6	тест +практика	210	90	15	45	30	105	15	7	
БД 15	SFT6103	Управлении данными и информацией	Деректер мен апаратты басқару	Data and information management	7	6	тест +практика	210	90	15	45	30	105	15	7
БД 16	NET6101	Компьютерные сети (Cisco)	Компьютерлік желілер (Cisco)	Computer Networks (Cisco)	5	5	тест +практика	150	60	15	30	90	15	5	
БД 17	SEC6101	Информационная безопасность и защита информации	Ақпараттық қауіпсіздік және апаратты қорғау	Information Security & Data Protection	5	5	тест +практика	150	60	15	30	90	15	5	
БД 18	SFT6101	WEB-программирование	WEB-бағдарламалау	WEB Programming	6	7	проект	180	60	15	30	15	105	15	6
БД 19	LAW6003	Правовые аспекты ИКТ	АҚТ-ның құқықтық аспектілері	Legal aspects of ICT	4	8	письм.	120	60	15	30	60	15		4
БД 20	SFT6003	Операционные системы	Операциялық жүйелер	Operating Systems	5	6	тест	150	60	15	30	90	15	4	6
БД 21	SFT6107	Человеческий компьютерное взаимодействие	Адам-компьютер қарым-қатынасы	Human-Computer Interaction	5	5	проект	150	60	15	30	90	15	5	
БД 22	IS6122	Основы бизнес-анализа	Бизнесі талдау негіздері	Fundamentals of Business Analysis	4	6	проект	120	60	15	30	60	15	5	
БД 23	IS6123	Анализ и проектирование систем	Жүйелерді талдау және жобалау	System Analysis and Design	3	7	проект	90	30	15	15	45	15		3
БД 24	SFT6104	ИТ-инфраструктура	АТ инфрақұрылымы	IT Infrastructure	5	6	проект	150	60	15	30	90	15		5

БД 25	SFT6109	Архитектура предприятия	Кәсіпорын сәулетшісі	Enterprise Architecture	5	7	проект	150	60	15	195	210	1005	90	15					5			
БД 25	SFT6102	Основы информационных систем	Ақпараттық жүйелер негіздері	Fundamentals of IS	5	2	проект	150	60	15		30	90	15									
		Итого:			59			1770	720	180	195	210	1005	180	0	4	0	5	0	15	23	14	4

3. Профилирующие дисциплины (ПД) - 53 кредита

3.1 Вузовский компонент - 13 кредитов

ПД1	PP 6102	Производственная практика	Өндірістік практика	Internship	8	4,6	отчет	240	0			120	90	30								4	
ПД2	PP 6104	Преддипломная практика	Диплом алдындағы тәжірибе	Undergraduate practice	5	8	отчет	150	0			75	60	15									5
		Итого:			13			390	0	0	0	195	150	45	0	4	0	0	0	4	0	4	0

3.2 Компонент по выбору - 42 кредита

ПД1		Дисциплина по выбору - 1.1 (Major)			5	5		150	60	15	30		90	15									
	IS6128	Моделирование и анализ бизнес-процессов (BA-1)	Бизнес-процестерлі модельдеу және талдау (BA-1)	Modeling and analysis of business processes (BA-1)			проект																
	SFT6111	Шаблоны проектирования (ISD-1)	Дизайн үлгілері (ISD-1)	Design Patterns (ISD-1)			проект																
ПД2		Дисциплина по выбору - 1.2 (Major)			5	6		150	60	15	30		90	15									5


	Итого теоретического обучения	Сумма кредитов:	228	6960	3075	615	645	1110	3825	765	25	35	32	28	25	35	38	1	4
5. Итоговая аттестация																			
	Написание и защита дипломной работы (проекта)	Дипломдық жұмыстың (жобаның) жазылуы және қорғау	8	240					240										8
	ВСЕГО		240	7200															

6. Additional educational programs (Minor)

Name of additional educational programs (Minor) with disciplines	Total number of credits	Recommended semesters of study	Documents on the results of the development of additional educational programs (Minor)
Minor 1	5	5	
Minor 2	5	6	
Minor 3	5	7	

7. Approval sheet with developers

Name of the educational program: 6B06104 «Business analysis»

№ p/p	Position, scientific or academic degree and surname and name of educational program developer	Date	Signature	Note
1	PhD, associate professor Rakhmetulayeva Sabina Batyrkhanova.			
2	McS, Kulbayeva Aliya Kayratovna		