AGREED
Chairman of the EMC,
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«14» 03 2023 г.

APPROVED
Rector of JSC
International Information
Technology University
_____ A.K.Kikmetov
«30» 03 2023 г.

EDUCATIONAL PROGRAM

6B06105 «Information systems»

(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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Almaty, 2023

The educational program 6B06105 «Information systems» 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 "07" dated "" 02. 2023 Protocol № 3

Acting Head of the Department signature Kozhamzharova D.Kh., MS

This educational program was reviewed and approved at a meeting of the University Scientific Council dated 30.03, 2023 Protocol № 8

Head of the Department signature Ajibaeva A. Sh.

for Educational and Methodological Affairs

Contents

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	EuropeanAssociationforQualityAssuranceinHigherEducation / 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

The educational program "6B06105 – Information systems" is aimed for training specialists of the highest level of qualification without a category, specialists of the highest level of qualification of the second category, specialists of the highest level of qualification of the first category. To achieve this goal, it is necessary to perform a number of tasks, including the purposeful formation of a contingent of students, specialized theoretical and practical training of students in the learning process focused on the modern needs of the employer.

A bachelor's degree graduate in the specialty – "6B06105-Information Systems" is awarded the academic degree of "Bachelor of Information and Communication Technology" in the educational program 6B06105 – "Information Systems".

Information systems is a field of science and technology that includes a set of means, ways and methods of human activity aimed for creating and applying systems for collecting, presenting, storing, transmitting and processing information.

The main educational program of bachelor's degree in the direction of

"6B06105-Information Systems" was developed on the basis of state educational standard and includes a curriculum, programs of academic disciplines, programs of educational, industrial practices.

The objects of professional activity of graduates are enterprises and organizations of various forms of ownership that develop, implement and operate information systems in various fields of human activity.

2. Purpose and objectives of the educational program

The purpose (goals) of the Bachelor's degree program in the field of IS is high-quality training of specialists in the field of information systems, including software, hardware, information, legal and management support for the development and maintenance of information systems and having competencies that allow using the acquired fundamental knowledge, modern information technologies and software tools in solving professional tasks.

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

- ability to analyze socially significant problems and processes, to use in practice the methods of the humanities, environmental, social and economic, legal sciences in various types of professional and social activities.
- ability to use Russian, Kazakh and foreign languages fluently as a means of business communication.
- 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.
- ability to professionally operate modern equipment, devices, network components, computer systems.
- ability to use methods of physical education and health promotion, to achieve the proper level of physical fitness to ensure full-fledged social and professional activities.
- ability to provide a mathematical justification for the formulation of the problem, to use mathematical modeling to describe the components of information systems, to conduct mathematical analysis; to use mathematical software for the development of information systems.
- ability to develop technical specifications for the development of an information system, to determine the criteria for the quality of an information system: to formulate technical, software and information requirements; to model the functional, information, software and technical support of an information system based on standard computer-aided design and research packages.
- ability to develop information and software for an information system based on modern methods and development tools.
- ability to provide author's support for the design, implementation and maintenance of information systems and technologies; to organize the interaction of the developer and customer teams, making management decisions in conditions of different opinions.

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	6B06105 "Information systems"
5	Brief description of the educational program	The educational program "Information Systems" includes the work of a set of means, ways and methods of human activity aimed at creating and applying systems for collecting, presenting, storing, transmitting and processing information.
6	Purpose of the EP	High-quality training of specialists in the field of information systems, including software, hardware, information, legal and management support for the development and maintenance of information systems.
7	Standard level ISCE	6
8	Standard level NQF	6

9	Standard level SFQ	6
10	Field of professional activity of the EP graduate:	education and science; enterprises and organizations of various forms of ownership that develop, implement and operate information systems in various fields of human activity (mechanical engineering, instrument making, science, technology, education, medicine, administrative management, business, entrepreneurship, commerce, banking systems, security of information systems, technology management processes, energy, power electronics, metallurgy, construction, transport, railway transport, communications, telecommunications, infocommunication management, postal services, chemical industry, agriculture, textile and light industry, food industry, medical and biotechnology, mining, underground safety enterprises and production, geology, oil and gas industry, geodesy and cartography, geographic information systems, forestry complex, chemical forestry complex, ecology, service sector, mass information systems, design, media industry, as well as enterprises of various profiles and all types of activities in the information economy society).
11	Objects of professional activity of EP graduates:	information processes, technologies, systems and networks, their instrumental (software, technical, organizational) support, methods and methods of design, debugging, production and operation of information technologies and systems in various areas of human activity.
12	Subject of professional activity	The educational program "Information Systems" at the bachelor's level provides professional qualifications: -in the field of knowledge representation and processing in information systems, -in the field of studying methods of human activity aimed at creating and using systems for collecting, presenting, storing, transmitting and processing information.
13	Functions of professional activity of an EP graduate:	-planning, system design, software development, implementation, system maintenance; -management of requirements for business processes and/or ICT projects of the organization; -installation, debugging of software and

		configuration of hardware for putting information systems into commercial operation; - administration; -support of information systems and technologies in the specified functional characteristics and compliance with quality criteria; - testing; -provision of software and hardware protection.
14	List of competencies of the educational program: 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. 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. 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. 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. 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 BC1: The ability to actually use the state language, the language of interethnic communication and a foreign language in professional activities. BC2: The ability to understand the basics of economic knowledge, ideas about finance and economics. 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. BC4: The ability to have the skills to use algorithms and programs. 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. 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. PC 1: The ability to develop a technical specification for the development of an	

	information system, to determine the criteria for the quality of an information system: to formulate technical, software and information requirements. PC2: The ability to model the functional, informational, software and technical support of an information system based on standard computer-aided design and research packages; to compile algorithms and database models. PC3: The ability to design architectures of components of information systems, including the human-machine interface of hardware and software complexes, operating systems and methods of information protection. PC 4: The ability to develop information and software of an information system based on modern methods and development tools. PC 5: The ability to provide author's support for the design, implementation and maintenance of information systems and technologies; the ability to organize the interaction of developer and customer teams, management decision-making in conditions of different opinions. PC 6: The ability to consolidate the acquired knowledge in production, formulate a problem statement and solve it by methods and means of programming and data analysis.	
15	Learning outcomes of the educational program: LO1:To argue the choice of basic standards, principles and design patterns, methods, tools and programming languages for the development of information systems. LO 2: To ensure the security and integrity of information systems and technologies. LO3: To use mathematical methods of processing, analysis and synthesis of professional research results in the development of information systems and use information and communication technologies in the field of e-commerce, financial accounting and business processes. LO4: To carry out technical design of information systems. LO5: To design database architectures of information systems. LO6: To use software, hardware, information, mathematical, functional support of information systems for software modernization, the formation of sections of the terms of reference for the design of IT-infrastructure, improvement of program modules, data processing for automated systems, design and development of front-end and back-end web resources and descriptions of information and mathematical models. LO 7: To use cooperation with colleagues, teamwork, knowledge of the principles and methods of organization and management of small teams. LO 8: To develop information systems and their components in various subject areas for solving practical scientific and technical problems using modern ICT and IT project management methods, using modern technologies such as 3D modeling, IoT, VR/AR technologies and others as tools.	
16	Form of study	full-time
17	Language of instruction	English
18	Volume of loans	240
19	Awarded Academic Degree	"Bachelor of Information and Communication Technology" in the educational program 6B06105 – "Information Systems".
20	Professional standards of the National Chamber of Entrepreneurs "Atameken"	278_40 Creation and management of information technologies 265_22_ Software testing 267_20_ Software maintenance 269_23_ Computer System Architecture

		management 271_14_ Computer systems infrastructure 274_36 Testing Web and multimedia applications
21	Developer(s) and authors:	JSC "International University of Information Technologies", Department of Information Systems: - Head of the Department, MS, Kozhamzharova D.Kh., - Acting Head of the Bachelor section of the Department of Information Systems, Associate Professor, Candidate of Technical Sciences Pachshenko G.N., - Lecturer of the Department of Information Systems Kopzhassarova M.A.

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
BC1							V	
BC2	V							V
BC3		V						
BC4	V					V		
BC5			V					
BC6		V						V
PC1		V		V				
PC2			V		V			
PC3		V		V	V			
PC4					V	V		V
PC5				V			V	
PC6				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
2.	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
3.	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
4.	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
5.	Information and communicatio n 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	2	GC2	No

		political knowledge is communicative, interactive, student-oriented, result-oriented and largely depends on the independent work of students.			
7.	Sociology	The course includes knowledge of sociological subject areas, research methods and directions. During the course, the main sociological theories and the most effective ways to gain in-depth knowledge about various aspects of our modern society will be discussed in detail. The special importance of this course for students is to develop the sociological imagination, to understand the basic concepts of sociology as a science.	2	GC1, GC2	No
8.	Psychology	This course presents psychology issues in a broad educational and social context. The knowledge, skills and abilities acquired and formed as a result of mastering the course content give students the opportunity to apply them in practice, in various spheres of life: personal, family, professional, business, social, in working with people - representatives of different social groups and age categories. The course is also designed to form bachelors' ideas about the factors complicating teaching at the present stage of society's development, about difficulties specific to this activity.	2	GC2, GC3	No
9.	Cultural studies	The course will help to become the basis for the study of the entire complex of social sciences and humanities, as well as a supplement to general courses in history and philosophy. The course includes such topics as morphology, semiotics, anatomy of culture; culture of nomads of Kazakhstan, cultural heritage of Proto-Turks, medieval culture of Central Asia, formation of Kazakh culture, Kazakh culture in the context of globalization, cultural policy of Kazakhstan, etc.	2	GC2	No
10	Physical education	The course is devoted to the formation of physical culture of the individual and the ability of directed use of various means of physical culture to preserve and strengthen health.	8	GC1, GC3	No
Cycle of general education disciplines University component /Component of choice (Elective component)					
11	Green technologies and economics	The course is devoted to the study of the theoretical foundations of the detailed understanding of the green economy and finance, the characteristics of the main segments	5	BC2, BC3	Information and communication technologies

		of the green economy in order to develop practical skills in the field of using the principles of the green economy for Kazakhstan.			
12	Paperwork in the state language	The course is dedicated to the activation and deepening of knowledge, skills and proficiency in the scientific style of speech of the Kazakh/Russian languages, the formation of professional language competence.	3	BC1	Kazakh/Russian language
13	Professionally - oriented foreign language	The course is devoted to the analysis of professional topics: "Computers and work", "Work in ICT", "Types of computer systems", "Basics of working with a computer", "Operating systems and graphical interface", "Text processing", "Cyberspace: security and crime", etc.	3	BC1	Foreign language
14	Physics	The course covers topics such as: Kinematics; dynamics; circular motion and gravity; energy; momentum; simple harmonic oscillations; torque and rotational motion; electric charge and electric force; DC circuits; thermodynamics and mechanical waves, field and potential; electrical circuits; induction of magnetism and electromagnetism; geometric and physical optics; and quantum, atomic and nuclear physics and sound.	4	BC3, BC6	No
15	Algebra and Geometry	The course includes: Matrix theory, systems of linear equations, vector theory, analytical geometry, limits and differentiation of functions of one variable.	4	BC6	No
16	Probability theory and mathematical 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	BC6, PC5	Algebra and Geometry
17	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	BC6, PC5	Algebra and Geometry

18	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
19	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	BC2, BC5, PC3	No
20	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	BC5, BC6, PC1	Computer networks, Information security and information protection
21	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).	4	BC5, BC6, PC1	No
22	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
Cycle of basic disciplines Elective component					

23	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
24	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	BC6	No
25	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	GC4, BC1	Foreign language
26	Basics of Web development	This course covers the basics of website development using HTML, Cascading Style Sheets (CSS), JavaScript and jQuery.	6	BC6	No
27	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	BC6	Introduction to Programming
28	IS architecture and design	This course focuses on the study of large systems and how they were divided into subsystems and components. Also on how the structuring of these system elements and their interfaces used to combine them facilitate communication and control. Students will study various notations and formalizations, studying the relationship between these structures and key attributes of quality and their impact on the implementation of the system.	5	PC4	Object-oriented programming

29	Architecture of computer systems	The course presents the basic principles of hardware concepts of computer hardware elements and methods for evaluating computer performance, which are used in computer system design processes from the point of view of an assembler programmer, computer architect and logic developer. The course contains details of the components necessary to understand the concept of machine computing.	4	BC3	Discrete Mathematics, Physics
30	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
31	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
32	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.	3	GC3 BC3	No
33	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	5	BC6	Information and communication technologies

		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.			
34	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
35	Project Studies	The course is devoted to the study of activities aimed at developing students' ability to make independent theoretical and practical judgments and conclusions, the ability to objectively evaluate scientific information, freedom of scientific search and the desire to apply scientific knowledge in educational activities, including for the implementation of a thesis project (work).	4	BC5	No
Cycle of profile disciplines University component/Component of choice (Elective component)					
36	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	BC5, BC6	No
37	Pre-graduate practice	The practice includes the consolidation of theoretical knowledge in the academic disciplines of the specialty; mastering practical skills,	5	BC5, BC6	No

		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.			
38	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
39	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	BC5, PC4	Object-oriented programming
40	Elective course - 1.1 (Major)		5	PC2	
41	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	5	PC2	Object-oriented programming

		of OOP.			
42	Elective course - 1.2 (Major)		5	PC2	
43	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)
44	Elective course - 2.1 (Minor)	Course 1 by choice of student	5	PC1, PC6	
45	Elective course - 1.3 (Major)		5	PC4	
46	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	Developme nt of Web components on the Java EE platform (ISD-2)
47	Elective course - 2.2 (Minor)	Course 2 at the choice of students	5	PC1- PC6	
48	Elective course - 1.4 (Major)		5	PC4	
49	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	PC2	Developme nt of Web components on the Java EE platform (ISD-2)
50	Elective course - 1.5 (Major)		5	PC6	

51	Client-Server Applications (ISD-5)	Study of the fundamental principles of application operation in the client-server architecture; mastering data storage and processing technologies in client-server architecture systems.	5	PC2	Development of Web components on the Java EE platform (ISD-4)
52	Elective course - 2.3 (Minor)	Course 3 at the choice of students	5	PC1- PC6	
52	Additional educational programs	Network associate, Advanced programming in .NET, Advanced programming in Java EE, Machine learning, Applied robotics, BigData, Oracle, SAP, Multimedia, Mobile, ACM ICPC, Engineering Mathematics, Actua rial Mathematics, Business Process Optimization, 3D Modeling, App Development, Internet of Things, Public Relations, International Journalism, Graphic Design	15	PC1- PC6	No
53	PL/SQL Programming (Oracle-1)	The aim of the course is to study the basic procedural language/structured query language, subroutines, query section and syntax, DML, advanced DML and scripts. Starting with a basic outline of what PL/SQL is, students will set the foundation for expanding their knowledge by studying data types, flow control, errors, and more. Students will explore strings, numbers, boolean values, and arrays.	5	PC1- PC6	Introduction to Programming
54	System Analysis and Design (ISB-1)	The purpose of the course is to study the main topics of the course: Introduction to system analysis. System disciplines, methods, system analysis procedure, main stages of system analysis, Mathematical and software tools of a system analyst. Methods of organization survey, history of system analysis development.Classification and typical composition of information systems, types of support Creation goals, project requirements, design methods, information flows, information system architecture. Information system life cycle Features of design as a type of activity, software design tools. Project risks, development priorities, time of errors and their consequences, implementation problems. Organization of work, project management, interaction with customers and experts As a result of mastering the discipline, the student should be able to: knowledge of the basic principles and approaches of system analysis and design, allowing to explore	5	PC1- PC6	Introduction to Programming

		complex information systems; the ability to apply the knowledge gained for the system analysis of business processes; knowledge of the methods of application of modern tools of system analysis and design of business processes.			
55	Fundamentals of Cloud technologies (CLD-1)	The purpose of the course is to study the main topics of the course: Introduction to system analysis. System disciplines, methods, system analysis procedure, main stages of system analysis, Mathematical and software tools of a system analyst. Methods of organization survey, history of system analysis development.Classification and typical composition of information systems, types of support Creation goals, project requirements, design methods, information flows, information system architecture. Information system life cycle Features of design as a type of activity, software design tools. Project risks, development priorities, time of errors and their consequences, implementation problems. Organization of work, project management, interaction with customers and experts As a result of mastering the discipline, the student should be able to: knowledge of the basic principles and approaches of system analysis and design, allowing to explore complex information systems; the ability to apply the knowledge gained for the system analysis of business processes; knowledge of the methods of application of modern tools of system analysis and design of business processes.	5	PC1- PC6	Mathematics, ICT, Introduction to Programming
56	Python Basics	The purpose of the discipline is to study the Python language, which allows you to develop programs in accordance with different paradigms: procedural programming, object–oriented, parametric, functional programming. This course covers all the main features of the Python language and their application in program development. The description of Python libraries necessary for creating a wide range of programs is given.	5	PC1- PC6	Introduction to Programming
57	Multimedia Technology (GD-1)	The purpose of the course is to study such basics of 3D modeling as: multimedia technology tools; stages and technology of creating multimedia technology products; design of multimedia technology software; configuration of multimedia technology hardware; implementation of static and	5	PC1- PC6	Information and communication technologies

		dynamic processes on multimedia tools.			
58	Development of mobile applications for IOS (Mobile-1)	The purpose of the course is to study mobile application development tools for iOS, such as XCode, to design interfaces and interactions and evaluate their convenience. Students will also learn how to design the application architecture correctly and how to work with complex data coming from a local database or remote API.	5	PC1- PC6	Introduction to Programming, Object-oriented Programming
59	Introduction to the development of the Internet of Things (IoT-1)	The purpose of the course is to study the element base of the "Internet of Things" devices, with operating systems and programming languages. Students will master wired protocols of information exchange between devices; wireless protocols of information exchange; methods of aggregation and processing of data from remote devices.	5	PC1- PC6	Physics
60	ERP Fundamentals (ERP-1)	The purpose of the course is to study the following sections: A brief history of ERP. What is an ERP system. The role of the ERP system. The concept of resource planning systems in the enterprise. The concept of the next generation of ERP-II. What an ERP system can do. Functions of the ERP system. The main purpose of the ERP system. Scope of application. Characteristics of ERP systems. Choosing an ERP system. The architecture of the ERP system. Classification of ERP systems. Market analysis of ERP systems. Introduction. New trends: rent of ERP systems.	5	PC1- PC6	Fundamentals of information systems
61	Web development on Golang	The purpose of the course is to learn the basics of programming in the Go language, as well as experience in using the language in the main tasks that are found today in server-side web development. This course will cover the basics of the language and the development of web services using the standard library. This course is designed for people with experience in web programming.	5	PCK1- PC6	Object-oriented programming, Web programming
62	Architecture and development of cloud solutions (CLD-2)	The purpose of the course is to study the main topics/modules that will be covered in the course: 1) AWS Academy Cloud Architecting 2)Introduction to Cloud architecture 3) Adding a storage layer Adding a computational layer Adding a Database layer Creating a network environment Connecting networks User and application access protection			

63	Robotics and IoT Systems (IoT-2)	The purpose of the course is to study the principles and methods of development, design and programming of control electronics based on the Arduino computing platform (controller) or its clone.			
64	Development of mobile applications for Android (Mobile-2)	The purpose of the course is to study the programming of mobile applications using the latest Android technologies. Topics include action lifecycle, resources, layouts, intents for multiple actions, menus, snippets and dialog boxes, action bar, adapters, saving data using shared settings, SQLite, and content providers. The emphasis is on the practical use of these components in applications. Includes a substantial team project.			
65	Basics of 3D Modeling (GD-2)	The aim of the course is to study a graphic editor with which you can model three-dimensional images of objects, as well as basic concepts of animation programs and fundamental tools that are necessary to create three-dimensional characters and animations. This discipline occupies an important place in the knowledge system, forming a modern approach to creativity through the use of computer technology.			
66	IS innovations and new technologies (ISB-2)	The purpose of this discipline is to study the concept of logistics system management in terms of procurement management. The interrelation of the concepts of strategy management, their correct definition and interpretation significantly facilitate the work to improve the efficiency of the organization.			
67	Advanced PL/SQL Programming (Oracle-2)	The aim of the course is to learn PL/SQL, and then explore the benefits of this powerful programming language. Students will learn how to develop stored procedures, functions, packages, and more.			
68	Unity Basics (GD-3)	The purpose of the course is to study six main sections, each of which will allow you to get acquainted with certain elements of the game engine. Each stage of the course is devoted to a specific topic, a fractional presentation of information will make it easier to assimilate it. Course Sections: 1. Introduction to Unity; 2. Unity Basics; 3. Introduction to the game engine; 4. Familiarity with other platforms; 5. Writing code; 6. Project development. At the "Getting to know Unity" stage, students will get acquainted with			

		what the game engine is, its history, functions and capabilities. The next stage - "Unity Basics" - will tell you about the basic principles of development on the platform. "Introduction to the game engine" will allow you to learn in practice the basic functionality and a set of tools necessary for development. The section "Getting to know other platforms" is dedicated to the study of analogues, will demonstrate to students different platforms and their capabilities, differences and similarities with Unity. "Writing Code" will teach students basic concepts for working with their own project, after which they will be able to write code for the project. The final stage "Project Development" is dedicated to the development of the student's project, and will help to implement the knowledge accumulated during the course.			
69	Digital Marketing	The aim of the course is to study digital marketing, which is an important component of marketing today. This course will provide you with practical digital marketing skills that will help you build your business. Students will gain knowledge about the digital marketing landscape and how digital technologies can be used to help companies identify opportunities and minimize risks. Case studies will be used to demonstrate how digital technology supports business goals and how it can highlight an enterprise. It is very important to better understand your target customer, so students will gain knowledge on how to create a user image that will help identify different demographic characteristics, behavior and needs of your consumers on the Internet and how to apply their new skills in future marketing activities by developing their own unique digital marketing strategy that can surpass competitors and achieve a number of business goals.	5	PC1-PC6	Information and communication technologies
70	Artificial intelligence	The purpose of the course is to study the basics of artificial intelligence, various types of neural networks and their application in various tasks, machine learning methods, principles of building neural networks. As a result of mastering the discipline, students will gain knowledge in the field of modern models of artificial neural networks, learn how to use them to solve practical problems. Students will have to carry out innovative engineering projects on development and software for	5	PC1-PC6	Mathematics, Introduction to Programming

		various purposes using modern design methods, advanced experience in developing competitive products, analyze and compare them. Students will be able to set tasks and develop algorithms for solving them for the implementation of software implementations of neural networks in order to solve various practical problems. This discipline provides a detailed overview and description of the most important methods of training neural networks of various structures, as well as practical tasks solved by these networks.			
71	Application development on the .Net platform	The purpose of the course is to study and develop console applications or windows applications .NET in the C# programming language using object-oriented programming concepts. The course topics include the paradigm .NET, C# programming, FCL, CLR, file processing, serialization, exceptions, structures, collections, object-oriented programming concepts, drawing, streaming processing, domain and application services, application configuration.	5	PC1-PC6	Object-Oriented Programming
72	Financial accounting	The purpose of the course is to study the following topics: working with financial statements, analysis of the balance sheet and profit and loss statement, analysis of the cash flow statement, analysis of liquidity, solvency and profitability. This course aims to provide students with the basics of financial reporting from the point of view of financial reporting users (lender and investor), as well as financial analysis tools and methods for decision-making. The course introduces a set of information that an analyst can use when analyzing the company's financial indicators, including the main financial statements (profit and loss statement, balance sheet, cash flow statement and statement of changes in equity). Students will learn how to compare companies financially, understand cash flows, as well as the main issues of profitability and risk analysis concepts. Students apply analytical tools and concepts in analyzing competitors, making credit and investment decisions, and evaluating businesses.	5	PC1-PC6	Information and communication technologies
73	IT audit and control (ISB-3)	The purpose of the course is to study the main types of OT-audit: Evaluation of the effectiveness of Infrastructure assessment Software Evaluation	5	PC1-PC6	IS innovations and new technologie

		Assessment of the quality of implementation Evaluation of the effectiveness of Controls Management of the servers themselves (ITSM) and of the precessions The ITSM conjugation, conscious on the way to OT management, business-oriented, requires users and calls for: • * To improve transparency FROM costs • * Ensure the availability of critical FROM services • * Establish generally accepted management standards The methodology for assessing the quality of OT-services and OT-processes management is based on collections of best practices: • UNTIL • COBIT (ISACA)			s
74	Cross-platform application development (Mobile-3)	The purpose of the course is to study and develop cross-platform applications. The discipline under study forms the general professional competencies of higher education, which provide: - familiarization with the basics of cross-platform programming; - study of the stages of creating applications in integrated development environments; - the ability to use the capabilities of modern programming technologies for various , architectures and platforms in the field of professional activity; - possession of skills to acquire new knowledge necessary for everyday professional activity.	5	PC1-PC6	Introductio n to Programmi ng
75	Smart System (IoT 3)	The purpose of the course is to study four sections: "Introduction to the Internet of Things"; "Technical means of the Internet of Things"; "Network technologies of the Internet of Things"; "Services, applications and models of the Internet of Things". The laboratory workshop of the discipline is implemented in several cycles of classes: the study of algorithms for connecting various sensors, the study of remote interaction technologies; the implementation by students of mini-projects based on case technology.	5	PC1-PC6	Introductio n to Programmi ng
76	Parallel programming	The purpose of the course is to study parallel programming technologies, to analyze the architecture of parallel computing systems, to acquaint students with the basic principles of parallelization of programs, to instill programming skills in students using new technologies.	5	PC1-PC6	Introductio n to Programmi ng

77	AR /VR Theory	The aim of the course is to study the history of technology development and highlights the theory of AR/VR. Therefore , the discipline consists of the following sections: 1. Virtual reality: the history of development and devices; 2. Augmented Reality: History and devices; 3. VR and AR applications; 4. Interface design for AR/VR applications; 5. AR/VR Market; 6. Challenges and prospects of AR/VR development. "Virtual Reality: the History of development and devices" highlights the stages of technology development in different years. Also at this stage, various devices and their structure are being studied, which allow you to work in VR mode. The section "Augmented Reality: History and Devices" introduces students to how AR develops and what devices capable of working with technology consist of.	5	PC1-PC6	Information and communication technologies, HCI
78	Blockchain Technologies	The purpose of the course is to study the mathematical algorithm of Blockchain. Blockchain is a mathematical algorithm that allows you to securely and privately exchange data through peer–to-peer networks. The main idea of blockchain technology is a chain of blocks with information about each transaction, which is stored in each unit of the computer network. Blockchain provides effective and reliable data protection, transparent and tamper-proof information exchange. The discipline covers a number of mathematical methods of the elliptic curve family and methods for creating software for blockchain systems in Java and Python. The discipline will familiarize students with the basics of blockchain on various platforms.	5	PC1-PC6	Mathematics, ICT, Introduction to Programming
79	Risk management tools	The aim of the course is to study the following topics: types of risks, methods of their prevention and mitigation, the role of the board of directors in terms of risk management, as well as people, processes and methods that can be used to support and ensure effective assessment. monitoring and control of risks in the organization.	5	PC1-PC6	Information and communication technologies
80	Internet entrepreneurship	The purpose of the course is to study the basics of Internet entrepreneurship. Interest in Internet entrepreneurship has been actively growing in recent years, since the Internet is the most open environment	5	PC1-PC6	Information and communication technologie

		for ideas, which attracts many aspiring entrepreneurs to it. At the same time, many startups do not live to bring the product to market: the mortality rate of startups in the first year of operation is about 90% (data from AngelList). On the one hand, this course will satisfy the demand for knowledge in startups, on the other hand, it will improve the quality of startups. A course on the technological side of creating an Internet startup (programming) is available at leading universities in the world. The course is intended for students interested in Internet entrepreneurship both at the level of small venture enterprises and in large corporations. Various issues facing marketers, management and consultants in bringing Internet projects to market and their development are investigated. Content of the discipline: 1. Introductory motivational lecture: Technological Entrepreneurship 2. Idea: sources of ideas for a startup, how to test your idea 3. Startup team. How to assemble and motivate a startup team 4. Business model 5. Market analysis. Assessment of the market potential. Competitor analysis 6. Target audience. Customer discovery and customer development. The cycle of adoption of new products 7. Startup metrics and product economics. Startup finance. Monetization models. 8. From idea to product. Concept, value proposition, MVP 9. Customer validation. Channel testing and preparation for scaling 10. Marketing communications: how to attract the first users. Setting up sales. PR startup. 11. Investments. Sources of investment. Types of investors. Requirements of funds. Preparing a pitch for investors			s
81	Fundamentals of business in IS	The purpose of the discipline is to provide students with systematic knowledge in the field of theoretical foundations and practical skills in the field of organizing and conducting business using information systems.	5	PC1-PC6	Information and communication technologies
82	E-Commerce Basics	The aim of the course is to study the principles of e-commerce from a business perspective, providing an overview of business and technology topics, business models, virtual value chains, as well as social innovation and marketing strategies. In addition, some of the main issues related to e—commerce will be studied - security, privacy, intellectual property rights, authentication, encryption, acceptable use policies and legal obligations. Students will create their	5	PC1-PC6	Information and communication technologies

		own web presence and sell it using an online platform. Topics covered include: e-business models, e-business infrastructure, Internet sales and marketing, web server hardware and software, B2C and B2B strategies, virtual communities, web portals, e-commerce software, payment systems, social networks, security. and user experience.			

5. Curriculum of the educational program

Module code	Module name	Cycle of course	Course component	Course code	Course name	Academic credits	Academic study period	Control over the academic period			Number of hours								Distribution of credits by academic period							
											Total	Classroom work					SIS		1 year		2 year		3 year		4 year	
								Exams	Differentiated pass	Course work/ project		Lectures	Laboratory	Practical	Studio classes	Practice	TSIS	SIS	1	2	3	4	5	6	7	8
																			Weeks in the academic period							
																			15	15	15	15	15	15	15	15
Common modules																										
Modules of the specialty/educational program																										
Additional modules beyond the qualification																										
Modules by choice																										
1		GED	GC	LAN6001A	Foreign language	5	1	1			5/150			45			15	90	5							
2		GED	GC	LAN6001KR	Kazakh (Russian) language	5	1	1			5/150			45			15	90	5							
3		GED	GC	HK6002	History of Kazakhstan	5	3	3			5/150	15		30			15	90			5					
4		GED	GC	ICT6001	Information and communication technologies	5	1	1			5/150	15	30				15	90	5							
5		GED	GC	SPS6002	Sociology	2	2	2			2/60	15		15			15	15		2						
6		GED	GC	LAN6002A	Foreign language	5	2	2			5/150			45			15	90		5						

7		GED	GC	LAN6002KR	Kazakh (Russian) language	5	2	2			5/150			45			15	90		5						
8		GED	GC	SPS6003	Political Science	2	2	2			2/60	15		15			15	15		2						
9		GED	GC	PhC6005	Physical education	4	2	2			2/60			30			15	15		4						
10		GED	GC	SPS6001	Philosophy	5	4	4			5/150	15		30			15	90				5				
11		GED	GC	SPS6005	Psychology	2	3	3			2/60	15		15			15	15			2					
12		GED	GC	SPS6004	Cultural studies	2	3	3			2/60	15		15			15	15			2					
13		GED	GC	PhC6006	Physical education	4	3	3			2/60			30			15	15			4					
14		GED	UC	SFT6125	Green technologies and economics	5	8	8			5/150	15		30			15	90								5
15		BD	BC	MAT6001	Algebra and Geometry	4	1	1			4/120	15		30			15	60	4							
16		BD	BC	PP6101	Educational practice	2	2	2			2/60					60				2						
17		BD	BC	PHY6001	Physics	4	2	2			4/120	15	30				15	60		4						
18		BD	BC	MAT6002	Mathematical analysis	6	2	2			6/180	30		30			15	105		6						
19		BD	BC	SFT6001	Introduction to Programming	6	1	1			6/180	15	30	15			15	105	6							
20		BD	BC	LAN6005K	Paperwork in the state language	3	3	3			3/90			30			15	45			3					
21		BD	BC	LAN6003PA	Professionally-oriented foreign language	3	4	4			3/90			30			15	45				3				
22		BD	BC	MAT6004	Probability theory and mathematical statistics	6	4	4			6/180	30		30			15	105				6				
23		BD	BC	SFT6104	IT-infrastructure	5	6	6			5/150	15	30				15	90						5		
24		PD	BC	SFT6108	IT Product Management	4	7	7			4/120	15	30				15	60							4	
25		BD	BC	SFT6109	Enterprise architecture	4	7	7			4/120	15	30				15	60							5	
26		BD	CCh	LAN6002DA	English for STEAM	4	3	3			4/120			45			15	60			4					
27		BD	CCh	SFT6101	Basics of Web development	6	3	3			6/180	15	30	15			15	105			6					
28		BD	CCh	MAT6003	Discrete mathematics	6	3	3			6/180	30		30			15	105			6					
29		BD	CCh	SFT6003	Operating systems	5	4	4			5/150	15	30				15	90				5				
30		BD	CCh	SFT6002	Object-oriented programming	5	4	4			5/150	15	30				15	90				5				
31		BD	CCh	NET6101	Computer Networks (Cisco)	5	5	5			5/150	15	30				15	90					5			
32		BD	CCh	SFT6105	IS architecture and design	5	5	5			5/150	15	30				15	90					5			

33		BD	CCh	SEC6101	Information security and information protection	5	5	5			5/150	15	30				15	90					5			
34		BD	CCh	SFT6107	Human-computer interaction	5	5	5			5/150	15	30				15	90					5			
35		BD	CCh	SFT6106	Architecture of computer systems	4	6	6			4/120	15	30				15	60						4		
36		BD	CCh	IS6118	WEB programming	6	7	7			6/180	15	30	15			15	105							6	
37		BD	CCh	RM6101	Project Studies	4	7	7			4/120	15		30			15	60							3	
38		BD	CCh	LAW6003	Legal aspects of ICT	3	8	8			3/90	15		15			15	45								4
39		PD	UC	PP 2301	Industrial practice	4	4	4			4/120					120						4				
40		PD	UC	SFT6102	Fundamentals of information systems	5	2	2			5/150	15	30				15	90		5						
41		PD	UC	IS6121	Data and information management	7	6	6			7/210	15	45	30			15	105						7		
42		PD	UC	PP 2301	Industrial practice	4	6	6			4/120					120								4		
43		PD	UC	PP 4302	Pre-graduate practice	5	8	8			5/150					150										5
44		PD	CCh	SFT6111	Design Templates(ISD-1)	5	5	5			5/150	15	30				15	90					5			
45		PD	CCh	SFT6119	Разработка Web компонентов на платформе Java EE (ISD-2)	5	6	6			5/150	15	30				15	90						5		
46		PD	CCh	IS6113	PL/SQL Programming (Oracle-1)	5	5	5			5/150	15	30				15	90					5			
47		PD	CCh	IS6107	System analysis and design (ISB-1)	5	5	5			5/150	15	30				15	90					5			
48		PD	CCh	IS6101	Fundamentals of Cloud technologies (CLD-1)	5	5	5			5/150	15	30				15	90					5			
49		PD	CCh	SFT6179	Python Basics	5	5	5			5/150	15	30				15	90					5			
50		PD	CCh	SFT6115	Multimedia technologies (GD-1)	5	5	5			5/150	15	30				15	90					5			
51		PD	CCh	SFT6117	Development of mobile applications for IOS (Mobile-1)	5	5	5			5/150	15	30				15	90					5			
52		PD	CCh	SFT6114	Introduction to the development of the Internet of Things (IoT-1)	5	5	5			5/150	15	30				15	90					5			
53		PD	CCh	IS6100	ERP Fundamentals (ERP-1)	5	5	5			5/150	15	30				15	90					5			
54		PD	CCh	SFT6154	Web development on Golang	5	5	5			5/150	15	30				15	90					5			

55		PD	CCh	IS6105	Architecture and development of cloud solutions (CLD-2)	5	6	6			5/150	15	30				15	90						5		
56		PD	CCh	SFT6121	Robotics and IoT systems (IoT-2)	5	6	6			5/150	15	30				15	90						5		
57		PD	CCh	SFT6124	Development of mobile applications for Android (Mobile-2)	5	6	6			5/150	15	30				15	90						5		
58		PD	CCh	SFT6122	Basics of 3D modeling (GD-2)	5	6	6			5/150	15	30				15	90						5		
59		PD	CCh	IS6106	IS innovations and new technologies (ISB-2)	5	6	6			5/150	15	30				15	90						5		
60		PD	CCh	IS6103	Advanced PL/SQL programming (Oracle-2)	5	6	6			5/150	15	30				15	90						5		
61		PD	CCh	SFT6127	Development of web application based on the Spring Framework (ISD-3)	5	7	5			5/150	15	30				15	90							5	
62		PD	CCh	IS6104	Unity Basics (GD-3)	5	7	5			5/150	15	30				15	90							5	
63		PD	CCh	MRK6101	Digital Marketing	5	7	5			5/150	15	30				15	90							5	
64		PD	CCh	SFT6186	Artificial intelligence	5	7	5			5/150	15	30				15	90							5	
65		PD	CCh	SFT6187	Application development on the .Net platform	5	7	5			5/150	15	30				15	90							5	
66		PD	CCh	ACC6704	Financial accounting	5	7	5			5/150	15	30				15	90							5	
67		PD	CCh	SFT6126	IT audit and control (ISB-3)	5	7	5			5/150	15	30				15	90							5	
68		PD	CCh	IS6109	Cross-platform application development (Mobile-3)	5	7	5			5/150	15	30				15	90							5	
69		PD	CCh	IS6108	Smart System (IoT 3)	5	7	5			5/150	15	30				15	90							5	
70		PD	CCh	SFT6129	Development of web services on the Java EE platform (ISD-4)	5	7	5			5/150	15	30				15	90							5	
71		PD	CCh	SFT6158	Parallel programming	5	7	5			5/150	15	30				15	90							5	
72		PD	CCh	SFT6152	AR /VR Theory	5	7	5			5/150	15	30				15	90							5	
73		PD	CCh	SFT6155	Blockchain Technologies	5	7	5			5/150	15	30				15	90							5	
74		PD	CCh	PM6100	Risk management tools	5	8	5			5/150	15	30				15	90								5
75		PD	CCh	IE6132	Internet entrepreneurship	5	8	5			5/150	15	30				15	90								5
76		PD	CCh	PM6101	Fundamentals of business in IS	5	8	5			5/150	15	30				15	90								5
77		PD	CCh	MGT6791	E-Commerce Basics	5	8	5			5/150	15	30				15	90								5
78		PD	CCh	MIN601	Minor 1	5	5	5			5/150	15	30				15	90					5			

79		PD	CCh	MIN602	Minor 2	5	6	6			5/150	15	30				15	90						5		
80		PD	CCh	MIN603	Minor 3	5	7	7			5/150	15	30				15	90							5	
Average weekly load in hours																			0	0	0	0	0	0	0	0
	1	General education disciplines (GED)				56			0	0	1560	120	30	390	0	0	210	810	15	18	13	5	0	0	0	5
		Required component (GED/RC)				51			0	0	1410	105	30	360	0	0	195	720	0	0	0	0	0	0	0	0
		University component (GED/UK)				5			0	0	150	15	0	30	0	0	15	90	0	0	0	0	0	0	0	5
		Component of choice (GED/CCh)				0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	Basic disciplines (BD)				111			0	0	3300	345	435	300	0	0	360	1860	10	12	19	19	20	9	19	3
		Required component (BD/RC)				0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		University component (BD/UC)				49			0	0	1410	150	150	165	0	0	165	780	10	12	3	9	0	5	9	0
		Component of choice (BD/CCh)				63			0	0	1890	195	285	135	0	0	195	1080	0	0	16	10	20	4	10	3
	3	Profiling disciplines (PD)				65			0	0	1725	150	315	30	0	0	195	1065	0	5	0	4	10	21	20	5
		Required component (PD/RC)				0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		University component (PD/UC)				25			0	0	525	30	75	30	0	0	75	345	0	5	0	4	0	11	0	5
		Component of choice (PD/ CCh)				40			0	0	1200	120	240	0	0	0	120	720	0	0	0	0	10	10	20	0
Total according to the curriculum						232			0	0	6585	615	765	705	0	0	765	3735	25	35	32	28	30	30	38	14
4	Additional types of training (minors)					15									Number of credits			Term			Number of hours			Number of weeks		
5	Module of final certification (MFC)														8						8					
Total, taking into account the Final State Certification															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)
SFT6116 Introduction to ACM ICPC Problem Solving (ACM-1)	5	5	
SFT6123 Basic algorithms for solving ACM ICPC problems (ACM-2)	5	5	
IS6100 ERP Programming (ERP-2)	5	5	

ХАЛЫҚАРАЛЫҚ УНИВЕРСИТЕТІ МЕЖДУНАРОДНЫЙ УНИВЕРСИТЕТ
INTERNATIONAL UNIVERSITY

AGREED
Chairman of the Educational and
Methodological Council

_____Mustafina A.K.
«__» _____2023 г.

APPROVED
Rector of JSC
International Information
Technology University
_____ A.K. Khikmetov
«__» _____2023 г.

EDUCATIONAL PROGRAM

6B06105 «Information systems»

(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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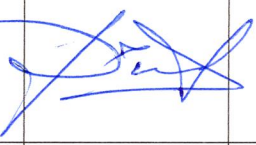
Almaty, 2023

7. Approval sheet with developers

Name of the educational program: 6B06105 «Information systems»

№ p/p	Position, scientific or academic degree and surname and name of educational program developer	Date	Signature	Note
1	Acting Head of the Department, MS, Kozhamzharova D.Kh.	15.03.2023		
2	Head of the Bachelor section of the Department of Information Systems, Associate Professor, Candidate of Technical Sciences Pachshenko G.N.	15.03.2023		
3	Lecturer of the Department of Information Systems Kopzhassarova M.A.	15.03.2023