

«ІЛІЯС ЖАНСУГІРОВ АТЫНДАҒЫ ЖЕТІСУ УНИВЕРСИТЕТІ» КЕ АҚ  
НАО «ЖЕТЫСУСКИЙ УНИВЕРСИТЕТ ИМЕНИ ИЛЬЯСА ЖАНСУГУРОВА»  
NP JSC «ZHETYSU UNIVERSITY OF THE NAME OF ILYAS ZHANSUGUROV»

**БЕКІТІЛДІ/ УТВЕРЖДЕНА/ APPROVED**

Басқарма отырысында/на заседании Правления/  
at the meeting of Board /

Хаттама/ Протокол/ Protocol № 9 «10» 04 2024

Басқарма төрағасы – Ректор/ Председатель

Правления – Ректор/ Chairman of the Board-Rector

з.ғ.д., профессор Е. Бурибаев/

д.ю.н., профессор Е. Бурибаев /

d.l.s., Professor Y. Buribayev



**БІЛІМ БЕРУ БАҒДАРЛАМАСЫ  
ОБРАЗОВАТЕЛЬНАЯ ПРОГРАММА  
EDUCATIONAL PROGRAM**

6B06104-SMART жүйелерді жобалау

6B06104- Проектирование Smart систем

6B06104- Designing Smart systems

**БАКАЛАВРИАТ /  
BACHELOR'S DEGREE**



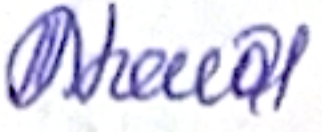
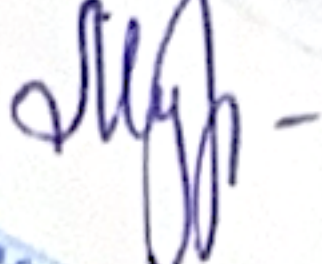

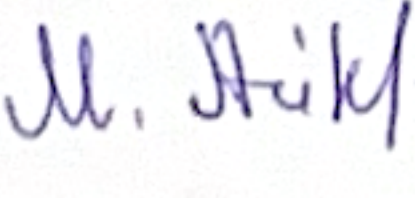
6B06104-SMART жүйелерді жобалау білім беру бағдарламасы келесідей нормативтік құжаттарға сәйкес құрастырылды:

1. Қазақстан Республикасының 27.07.2007 ж. № 319-III бұйрығымен бекітілген «Білім туралы» Заңы;

2. ҚР Білім және ғылым министрінің 20.04.2011 ж. №152 бұйрығымен бекітілген Оқытудың кредиттік технологиясы бойынша оқу үдерісін ұйымдастыру қағидасы;

3. Қазақстан Республикасы білім және ғылым министрінің 20.07.2022 ж. № 2 бұйрығымен бекітілген Жоғары білім берудің мемлекеттік жалпыға міндетті стандарты;

Әзірлеушілер:


Білім беру бағдарламаларын әзірлеу бойынша Академиялық комитет төрағасы		Туkenова Наталья Иембергеновна, п.ғ.к., ақпараттық-коммуникациялық технологиялар бойынша білім беру бағдарламасының жетекшісі 8 705 671 7788, t.natalia_66@mail.ru
Білім беру бағдарламаларын әзірлеу бойынша Академиялық комитет мүшелері		
Академиялық персонал		Мурсакимова Гульжан Алтайбековна, техникалық ғылымдар жоғары мектебінің оқытушы-дәріскері 8 707 363 4675, gmursakimova@mail.ru
Жұмыс беруші кеңесшілер		Сатқұлов Бақтияр Бағланұлы Талдықорған жоғарғы политехникалық колледжі - директордың оқу және инновация жөніндегі орынбасары 8 775 144 1010, bbs.mamyr@gmail.ru
Білімгер-кеңесшілер (студент/магистрант/докторант)		Мырзахмет Айкүміс Біржанқызы, техникалық ғылымдар жоғары мектебі «SMART жүйелерді жобалау» білім беру бағдарламасының 1 курс студенті 8 708 245 6876, aiko.aikoko@mail.ru

Білім беру бағдарламасы талқыланды және бекітуге ұсынылды:

Университеттің Академиялық Кеңесі

Хаттама № 7 «26» 03 2024ж.

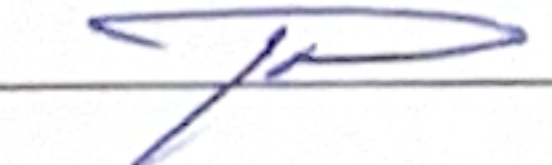
Университеттің Академиялық Кеңесі төрағасы

 Б. Таубаев

Техникалық ғылымдар жоғары мектебінің Кеңесі

Хаттама № 8 «25» 03 2024ж.


ТГЖМ Деканы

 Е. Андасбаев

Техникалық ғылымдар жоғары мектебінің Академиялық комитеті

Хаттама № 7 «20» 03 2024ж.

Техникалық ғылымдар жоғары мектебінің Академиялық комитеті төрағасы

 Г. Сеитова



Образовательная программа 6B06104- Проектирование Smart систем разработана в соответствии со следующими нормативными документами:

1. Закон РК «Об образовании» от 27.07.2007 г. приказ №319-III;
2. Правилами организации учебного процесса по кредитной технологии обучения, утвержденными Приказом Министра МОН РК от 20.04.2011 г. приказ № 152;
3. Государственным общеобязательным стандартом высшего образования, утвержденным приказом министра образования и науки Республики Казахстан от 20.07.22 года приказ № 2;

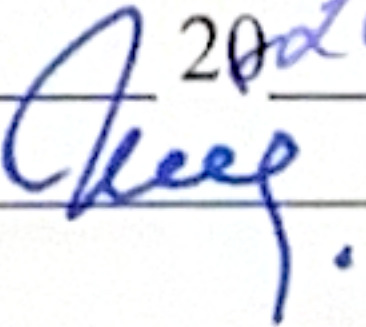
#### Разработчики:

Председатель Академического комитета по разработке образовательных программ		Тукенова Наталья Иембергеновна, к.п.н., руководитель образовательной программы по информационно-коммуникационным технологиям 8 705 671 7788, t.natalia_66@mail.ru
Члены Академического комитета по разработке образовательных программ		
Академический персонал		Мурсакимова Гульжан Алтайбековна, преподаватель-лектор высшей школы технических наук 8 707 363 4675, gmursakimova@mail.ru
Работодатели-консультанты		Сатқұлов Бақтияр Бағланұлы, Заместитель директора по учебной и инновационной работе-Талдыкорганский высший политехнический колледж 8 775 144 1010, bbs.mamyr@gmail.ru
Обучающиеся - консультанты (студенты/магистранты/ докторанты)		Мырзахмет Айкумис Биржановна, студентка 1 курса образовательной программы «Проектирование Smart систем» высшей школы технических наук 8 708 245 6876, aiko.aikoko@mail.ru

Образовательная программа рассмотрена и рекомендована к утверждению на заседаниях:

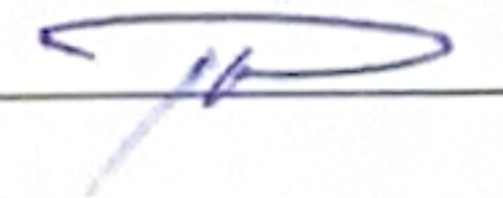
Академического совета университета

Протокол № 7 «26» 03 2024 г.

Председатель Академического совета  Б. Таубаев


Совета высшей школы технических наук

Протокол № 8 от «25» 03 2024 г.

ВШТН Декан  Е. Андасбаев

Академического комитета высшей школы технических наук

Протокол № 7 от «20» 03 2024 г.


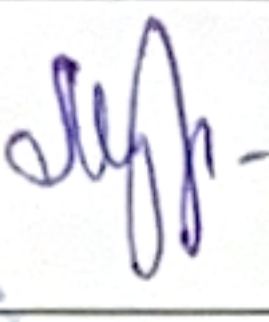

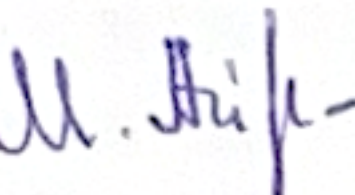
Председатель АКВШТН  Г. Сеитова



The educational program 6B06104- Designing Smart systems is developed in accordance with the following regulatory documents:

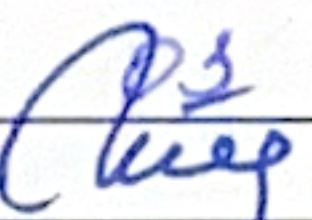
1. The Law of the Republic of Kazakhstan «On Education» dated 27.07.2007, No.319-III;
2. Order of the Minister of Education and Science of the Republic of Kazakhstan dated 20.04.2011, No.152 «Rules for the organization of the educational process on credit technology of education»;
3. Order of the Minister of Education and Science of the Republic of Kazakhstan dated 20.07.2022, No 2 «On approval of the State Mandatory Standards of Education at All levels of Education»;

Developers:


Chairman of the academic committee for the development of Educational Program		Tukenova Natalya Iembergenovna, Candidate of Pedagogical Sciences, head of the educational program in information and communication technologies 8 705 671 7788, t.natalia_66@mail.ru
Members of the academic committee for the development of Educational Program		
Academic personnel		Mursakimova Gulzhan, teacher-lecturer at the Higher School of Technical Sciences 8 707 363 4675, gmursakimova@mail.ru
Employers consultants		Satkulov Bakhtiyar Taldykorgan Higher Polytechnic College- Deputy Director for Educational and Innovative work 8 775 144 1010, bbs.mamyr@gmail.ru
Student consultants		Myrzakhmet Aikumis, 1st year student of the educational program " Designing Smart systems" of the Higher School of Technical Sciences 8 708 245 6876, aiko.aikoko@mail.ru

The educational program was reviewed and recommended for approval at the meetings:

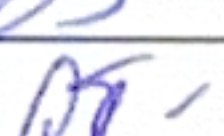
Academic Council of the University

Protocol № 7 from «26» 03 20 24 y  
Chairman of Academic Council  B. Taubayev

Council of the Higher School of Technical Sciences

Protocol № 8 from «25» 03 20 24 y  
HSTS Dean  E. Andasbayev

Academic Committee of the Higher School of Technical Sciences

Protocol № 7 from «20» 03 20 24 y  
Chairman Academic committee of HSTS  G. Seitova





# 1. PASSPORT OF THE EDUCATIONAL PROGRAM

## 1.1 Context

**Registration number:** 6B06100288

**Code and classification of the domain of education:** 6B06 Information and communication technology

**Code and classification of the direction of preparation:** 6B061 Information and communication technology

**Group of educational programs:** B057 Information technology

**Name of the educational program:** 6B06104 - "Designing Smart systems"

**University partner:**

**Type of EP:** new

**Program type:** First cycle: Bachelor degree 6 level according to NQF / ORC / ISCED

**Awarded degree:** Bachelor in Information and Communication Technologies in the educational program 6B06104 - "Designing Smart systems"

**Total amount of credits:** 240 academic credits

**Typical study period:** 4 years

**Language of study:** Kazakh, Russian, English

**License for educational activities:** License for educational activities: The Educational program is implemented on the basis of the Appendix to the License KZ36LAA00018662 (018) dated August 24, 2020 in the direction of training 6B061- Information and communication technologies, issued by the Committee for control in the field of education and science of the Ministry of education and science of the Republic of Kazakhstan.

**Professional standards for the development of OP:**

Professional standards developed by the National chamber of entrepreneurs of the Republic of Kazakhstan " Atameken» :

1. Professional standard «Software testing».
2. Professional standard "System analysis in information and communication technologies".

Professional standard "System and network administration".

## 1.2 Place of NJSC "Zhetysu University named after Ilyas Zhansugurov" in the system of higher and postgraduate education of the Republic of Kazakhstan

Zhetysu University named after Ilyas Zhansugurov is a large regional multidisciplinary university of the Zhetysu region, which provides three-stage training (bachelor's, master's and doctoral PhD) in a wide range of specialties.

**Mission:** Training competitive personnel that satisfies the industrial and innovative development needs of both Zhetysu region and Republic of Kazakhstan.

**Strategic goal:**

1. Providing high-quality training of competitive personnel;
2. Modernization of the content of higher and postgraduate education in the context of global trends.

Positions of the university in national and international rankings:

- 4th place in the national ranking of multidisciplinary universities of the Republic of Kazakhstan (NAOKO) - 2022;
- TOP-241-250 best universities in developing Europe and Central Asia in the regional QS World University Rankings: Emerging Europe and Central Asia 2021;
- 6th place among 95 universities of the Republic of Kazakhstan in the ARES rating.

## 1.3 Profile of the educational program

**Rationale:** The design of SMART systems is aimed at preparing for the implementation of design, production and technological, organizational and managerial, operational, expert and analytical activities.



The educational program makes it possible to ensure international recognition of national educational programs, create conditions for academic mobility of students and teaching staff of educational organizations, as well as improve the quality of education.

The educational program 6B06104– "Designing SMART systems" is a set of educational and methodological documents and materials that define the requirements for the development and conditions for the implementation of an educational program by a higher educational institution in accordance with the field of training.

The educational program has been developed based on the competence of the specialist training model, which meets the needs of the labor market and the requirements of employers. This model is a description of key competencies

***Labor market research in accordance with employers' requests:*** Information systems are used by organizations for different purposes. They increase productivity by helping to do work better, faster and cheaper, functional efficiency, helping to make the best decisions. Information systems improve the quality of services provided to customers and clients, help to create and improve products. They make it possible to consolidate customers and alienate competitors, change the basis of competition by changing components such as price, cost and quality.

The analysis of interaction with employers showed a fairly high demand for graduates of the educational program 6B06104 – "Designing SMART systems" in the labor market. Enterprises and organizations of various forms of ownership rely on IT departments in their activities, which automate all types of activities of the organization and enterprise and ensure its presence in the Internet space.

The study of employers' opinions on the quality of training of specialists OP 6B06104– "Designing SMART systems" is also carried out in the process of conducting practical training by students, according to the results of which they receive characteristics from the heads of practices and organizations, as well as employment results and employer reviews. The characteristics of the students of OP 6B06104– "Designing SMART systems" indicate a fairly high level of theoretical training, the ability to apply knowledge in practice, and their compliance with the modern requirements of the future IT specialist.

***The purpose of the educational program is:*** The main purpose of the educational program is to provide students with intensive practical training covering both theoretical and practical aspects in the field of intelligent systems, including software development, as well as improving their skills in related fields such as mathematics, project management and entrepreneurship

***Distinctive features of the program:***

<i>Field of professional activity</i>	branches of science and technology, where a set of technologies, tools and methods are used, designed in one form or another for the exchange of information at a distance, the transformation of information using electronic means. Developer of universal IT
<i>Objects of professional activity</i>	these are enterprises, complexes, institutions, educational organizations, etc. where there are systems and facilities: - communications and switching; - multi-channel telecommunications; - radio communications, including satellite, radio relay and mobile systems; - sound and television broadcasting, multimedia equipment; - receiving and transmitting data; - electronic, including computerized object management, information conversion; - information protection in telecommunication systems; - metrological support of telecommunication systems and networks; -management of operational and maintenance of telecommunication devices.
<i>Branch of the Department</i>	Taldykorgan Higher Polytechnic College; School of robotics "Future-IT"



	IT Hub Kaynar-Media LLP LLP "Dzhanekenov Design Institute Zh.R." KSU "Information and analytical Center of Taldykorgan"
<i>Practice bases</i>	Kazpost JSC Kainar JSC Zhetysu TV Channel LLP LLP "Dzhanekenov Design Institute Zh.R." LLP "ASL" School of robotics "Future-IT" IT Hub
<i>The possibility of studying on academic mobility</i>	Partner universities: - University of Lodz, Lodz (Poland); - University of Management and Science, Koala Lampur (Malaysia) - Riga Technical University, Riga (Latvia); - Czech Agrotechnical University (Czech Republic)
<i>Scholarship programs</i>	State educational order, grant of local executive bodies

#### **1.4 Profile of the graduate**

##### ***Graduate attributes according to Dublin Descriptors:***

- 1) demonstrate knowledge and understanding in the field of study based on advanced knowledge in the field of study;
- 2) apply knowledge and understanding at a professional level, formulate arguments and solve problems in the field of study;
- 3) collect and interpret information in order to form opinions with due regard to social, ethical and scientific considerations;
- 4) apply theoretical and practical knowledge for solving practical and professional tasks in the field under study;
- 5) learning skills necessary for independent further study in the field under study;
- 6) know scientific research and academic writing methods and apply them in the field under study;
- 7) apply knowledge and understanding of facts, phenomena, theories and complex dependencies between them in the field under study;
- 8) understand the meaning of principles and culture of academic honesty.

##### ***Graduates competences due to EP:***

**KK1** – Have sufficient horizons in the field of general education disciplines and is able to take them into account when making decisions in professional activities.

**KK2** – To express thoughts and arguments in the state and foreign languages, the language of interethnic communication; to use various sources of information; to possess the skills of public speaking, argumentation, discussion and polemic in the listed languages.

**KK3** – To choose an ICT tool for solving specific engineering problems, ready to identify the natural science essence of the problems that arise in the course of professional activity.

**KK4** – To understand the basic principles of leading a healthy, harmonious lifestyle, creating and maintaining a favorable moral and physical atmosphere.

**KK5** – To find organizational and managerial solutions in non-standard conditions and in conditions of different opinions and willingness to take responsibility for them.

**KK6** – To apply the theory and methods of mathematics, theoretical and experimental research methods to build qualitative and quantitative models of objects and processes in the natural science field of activity.

**KK7** – To have the ability to use programming languages and tools for software development, to find errors in the source code and to operate and maintain programs.



**KK8** is capable of designing distributed information systems, their components and protocols of their interaction, administering local and remote network resources, using methods and tools for troubleshooting in networks.

**KK9** – Capable of using diagnostic and testing equipment, able to take into account current trends in the development of electronics, measuring and computing equipment, information technology in their professional activities, perform calculation and design of electronic devices, circuits and devices of various types

**KK10** – To work in a team applying the principles of a project approach and independence in the performing discipline.

**KK11** – The ability to plan and implement measures to ensure the information security of the organization.

**KK12** is the ability to set and solve applied problems using modern Internet technologies.

**KK13** - To use methods for managing the processes of requirements development, risk assessment of acquisition, design, construction, testing, evolution and maintenance of information systems.

**KK14** - To be able to apply the basic processes, methods and tools for the development of information systems and software.

**KK15** - To possess the latest information technology tools and apply them in their professional activities.

***Upon completion of the study of compulsory disciplines of the GED cycle, the student will be able:***

- 1) assesses the surrounding reality on the basis of worldview positions formed by knowledge of the fundamentals of philosophy, which provide scientific understanding and study of the natural and social world by methods of scientific and philosophical cognition;
- 2) applies the functionality of modern microprocessors, sensors and microcontrollers; analyze and synthesize technical hardware and software solutions;
- 3) argues his own assessment of everything that is happening in the social and industrial spheres;
- 4) shows a civic position based on a deep understanding and scientific analysis of the main stages, patterns and peculiarities of the historical development of Kazakhstan;
- 5) be able to analyze various sources of information, ideas and concepts, systematize sources in order to write academic papers, reports and conduct oral presentations and negotiations;
- 6) apply modern theoretical and experimental research methods in order to create new promising computerization tools;
- 7) be able to analyze and develop computer programs in areas related to cloud computing, artificial intelligence and machine learning, the Internet of Things, cybersecurity and networks for effective design of computer systems of varying complexity;
- 8) uses scientific methods and research techniques of a specific science, as well as the entire socio-political cluster;
- 9) develops his own moral and civic position;
- 10) operates with social, business, cultural, legal and ethical norms of the Kazakh society;
- 11) demonstrates personal and professional competitiveness;
- 12) know the main classes of ICT systems, tasks and tools, understand the domain areas of their application and justify the choice when solving production or business tasks;
- 13) selects the methodology and analysis;
- 14) summarizes the results of the study;
- 15) know the specifics of working in a particular operating system, be able to organize application support in other operating systems. Know how to organize device support, hardware drivers, network operating systems;
- 16) be able to design, deploy, administer and protect computer network solutions;
- 17) be able to work as part of a team of performers when performing laboratory, bench, landfill, acceptance and other types of tests of systems and means of operation, maintenance, repair and service of intelligent systems;



- 18) master the methods of determining the business niche and conducting technical and economic analysis, commercialization of technological solutions. To develop entrepreneurial thinking and managerial skills..
- 19) uses various types of information and communication technologies in personal activities: Internet resources, cloud and mobile services for searching, storing, processing, protecting and distributing information;
- 20) be able to

***Learning outcomes:***

**LO1.** Use financial instruments in practice when evaluating financial innovations, the possibilities of using cryptographic methods and blockchain technology.

**LO2.** To evaluate a holistic view of the basic concepts and algorithms of mathematical models built on neural networks for the development of Internet services and the use of SMART technologies.

**LO3.** Modify existing software to correct errors, adapt to new hardware, update interfaces and improve performance.

**LO4.** Design information models using modern DBMS for building, managing and applying a database.

**LO5.** Have the ability to evaluate and apply research methods and innovative approaches to understanding socially significant social phenomena and processes in legal, economic, entrepreneurial, industrial, environmental, cultural environments and anti-corruption policy.

**LO6.** Possess the means and programming environment for creating mobile applications and developing electronic educational resources using digital audiovisual materials in addition to text materials, work with graphic libraries, modern graphic packages and systems.

**LO7.** Develop technical requirements for hardware and software when placing computer equipment, apply methods for solving problems of analysis and calculation of characteristics in the field of artificial intelligence, machine learning, computer systems and networks.

**LO8.** Develop computer networks based on the analysis and selection of effective modeling tools, hardware and software components for solving various tasks.

**LO9.** Speak a foreign language in the professional field of programming and graphics.

**LO10.** Analyze the effectiveness of the application of mobile system design methods and the results of planning experiments and research.

**LO11.** Possess the methods and ability to collect and control the quality of information in the design of information systems and technologies.

**LO12.** Conduct qualitative mathematical and physical research based on the analysis.

***Employment opportunities:***

***The graduate has the opportunity for employment in such organizations and institutions as:***

- design, implementation and operation of automated control systems in the field of industry; development, implementation and operation of information retrieval systems in the field of science and education;
- development, implementation and operation of expert systems and intelligent systems in the field of healthcare;
- development, implementation and operation of information management systems in small and medium-sized businesses;
- development, implementation and operation of information and organizational systems in public administration.







## 2. THE CONTENTS OF THE EDUCATIONAL PROGRAM

### 2.1 Modules description

№ M o d u l e	Code and name of the module	№ and name of the discipline	Num ber of credi ts	Cycle of disci plines	Generated module learning outcomes
1.	SH -1 «Social humanitarian»	History of Kazakhstan	31	GED	To assess situations in various areas of interpersonal, social and professional communication, taking into account the basic knowledge of sociology, political science, cultural studies and psychology; to build a personal educational trajectory throughout life for self-development and career growth, to focus on a healthy lifestyle to ensure full-fledged social and professional activities through methods and means of physical culture.
		Social and Political knowledge module (Sociology, Cultural studies, Political science, Psychology)		GED	
		Philosophy		GED	
		1) Economics and entrepreneurship 2) Ecology and life safety basics 3) Basics of law and anti-corruption culture 4) Methods of scientific research 5) Ilyastanu 6) Fundamentals of financial literacy		GED	
		Physical training		GED	
2.	IK-2 "Information and communicatio n"	Foreign language	25	GED	Use various types of information and communication technologies in personal activities: Internet resources, cloud and mobile services for searching, storing, processing, protecting and distributing information; enter into oral and written communication in Kazakh, Russian and foreign languages to solve problems of interpersonal, intercultural and industrial (professional) communication.
		Kazakh (Russian) language		GED	
		Information and communication technology		GED	
3.	ST-3 SMART technology	Introduction to SMART Technologies	15	BD	Be able to use modern software for the design of SMART technologies, use database design automation tools, design, administer and use databases in the environment of selected target SMART technologies; To master the methodology and
		1)Startups and technology entrepreneurship 2)SMART Technology Management		BD	



					methodology of conducting research on the information model of the enterprise, the skills of independent work on the management of modern SMART technologies
		SMART Systems Administration		MD	
4.	PhM 4 Physics and mathematics	1) General Physics 2) Computational Physics	18	BD	Apply computational methods to solve typical problems of the professional field with bringing the solution to a practically acceptable numerical result; navigate the mathematical apparatus of the professional field, build a mathematical model of the object (phenomenon) under study; correctly mathematically formulate a computational problem, analyze its properties, reasonably choose the optimal numerical solution method, analyze the properties of the algorithm; implement numerical algorithms for solving computational problems tasks, bring solutions to a numerical result, analyze the solutions obtained
		Probability and statistics in an intelligent system		BD	
		Electronics		BD	
5.	AP 5 Algorithmization and programming	Algorithms and data structures	29	BD	Development of algorithmic thinking necessary for professional activity in modern society; acquisition of skills in composing and writing algorithms for a specific performer; acquisition of knowledge about algorithmic constructions, logical values and operations; familiarity with programming languages and basic structures of algorithms such as linear, conditional and cyclic.
		1)Programming in Java 2)Programming in Kotlin language		BD	
		Advanced Python Programming		MD	
		1) C / C ++ programming technologies 2)Basics of programming in C#		BD	
		1)Intelligent data analysis 2)Introduction to data analysis		BD	
		Training practice		BD	
6.	HSTC-6 «Hardware and software tools and complexes»	Architecture and organization of computer systems	48	BD	Apply the basic laws of natural science disciplines in their professional activities, use methods of mathematical analysis and computer modeling, conduct theoretical and experimental research;
		1) Software development methodology 2)Programming in the		MD	



		ARDUINO environment			analyze the situation at work, carry out current and final control, evaluate and adjust their actions, be responsible for the results of their work.
		1)SMART Systems Security 2)Wireless communication and networks		MD	
		Fundamentals of artificial intelligence		BD	
		Information systems security		BD	
		Computer networks		MD	
		1)Modeling neural networks 2)Neural Network Administration		MD	
		1)Modeling information processes and systems 2) Mathematical and computer modeling		BD	
		1)Digital processing of video and audio information 2)Hardware and software video editing		BD	
7.	SEMEP 7 «Skills of effective management of the educational process»	Professional terms in the field of SMART technologies	10	BD	The use of methods for evaluating the effectiveness of research activities; the search for information at each stage of the preparation of research work; the development of research methodology; the use of current standards in professional activities; the correct choice of research methods; possess information retrieval methods to prepare scientific papers; planning and conducting an experiment; use and create: electronic courses; professional IT terms.
		1)Methodology of writing scientific publications 2)Development of electronic courses		BD	
8.	ITIS-8 «Innovative technologies in information systems»	1)Digital animation technology 2) Modeling in 3D Max	33	BD	Use methods and tools of computer graphics and geometric modeling; use modern software in the field of computer graphics development; basic techniques for creating and editing images in vector editors; skills for editing
		1) Vector and raster graphics 2) Engineering and computer graphics		BD	



		Industrial Practice		MD	photorealistic images in raster editors; Process audio and visual content by means of sound, graphic and video editors; Create and play videos, presentations, slide shows, media files and other final products from the original audio, visual and multimedia components by means of a personal computer and multimedia equipment.
		Undergraduate or Industrial practice		MD	
		Writing and defending a thesis (project) or passing a comprehensive exam		IA FC	
9.	DBDM-9 Database Development and Management	Advanced Databases (NoSQL)	15	MD	To know modern database design methods, software products necessary for creating databases in complex organizational systems, modern database management systems, theoretical foundations and basic principles of creating databases of information systems; Knowledge of modern tools for creating databases, the ability to automate their design processes, experience working with various target database management systems; the ability to conduct research on enterprise information models, skills of independent work with modern DBMS in accordance with the methodology and methodology.
		1) Big Data and Cloud Computing 2) Blockchain technology		MD	
		Industrial Practice		MD	
10.	MIMT10 Modern Internet and Mobile Technologies	Web Programming	21	MD	Use the programming language to develop functional websites and interfaces, and also allows you to master the basics of working and interacting with a database; To apply algorithms of machine learning and pattern recognition in solving business problems, based on a semester project consisting of analyzing a business case, building a solution project and software implementation and evaluation.
		Web application development		MD	
		1) Mobile App Development 2) Development of corporate applications		MD	
		1) Internet of Things 2) Machine Learning		MD	



## 2.2 Information about disciplines

№	Name of the discipline	Brief description of the discipline (30-50 words)	Number of credits	Formed learning outcomes (codes)
<b>Cycle of general education disciplines</b> <i>compulsory component</i>				
1.	History of Kazakhstan	The purpose of the discipline is to provide objective knowledge about the main stages of the development of the history of Kazakhstan from ancient times to the present. Forms knowledge and understanding of the main stages of the development of the history of Kazakhstan; the ability to correlate the phenomena and events of the historical past with the general paradigm of the world-historical development of human society through critical analysis; skills of analytical and axiological analysis in the study of historical processes and phenomena of modern Kazakhstan; the ability to objectively and comprehensively comprehend the immanent features of the modern Kazakh model of development; to systematize and give a critical assessment of historical phenomena and processes of the history of Kazakhstan.	5	LO1
2.	Philosophy	The goal is to form an understanding of philosophy as a special form of cognition of the world and to give a holistic view of its main chapters, problems and methods in the framework of their future professional activities. Studies the specifics of philosophical understanding of reality. Explains the role and significance of key worldview concepts as values of social and personal existence of a person in the modern world; analyzes socio-cultural and personal situations to justify and make ethical decisions. Forms the ability to classify the methods of scientific and philosophical knowledge of the world; formulate and competently argue their own moral position in relation to the current problems of modern global society.	5	LO1
3.	Information and communication technology	The goal is to develop the ability to critically evaluate and analyze processes, methods of searching, storing and processing information, ways of collecting and transmitting information through digital technologies. Forms the ability to critically understand the role and significance of modern information and communication technologies in the era of digital globalization and the formation of a new "digital" thinking, knowledge and skills of using modern information and communication technologies in various activities.	5	LO1
4.	Social and Political knowledge module (sociology, cultural studies, political science, psychology)	The purpose of the discipline is to form the socio-humanitarian worldview of students in the context of solving the problems of modernization of public consciousness, strengthening the values of tolerance, intercultural dialogue. Formation of students' ideas	8	LO1



		about the basic principles of functioning of modern society and its social and political institutions, understanding of the main stages of development of culture of Kazakhstan. To develop students' skills of independent analysis of modern realities and trends in the development of society, assessment and forecasts. Instilling the skills of using the knowledge gained in the process of mastering the disciplines of the socio-political module in professional activity; the formation of critical thinking skills and the ability to apply it in practice.		
5.	Foreign language	The goal of this discipline is the formation of intercultural and communicative competence of students in the process of foreign-language education at a sufficient level (A2, European competence) and the level of basic sufficiency (B1, European competence). Depending on the level of training, the student at the time of completion of the course reaches the level of B2 European competence with the presence of the language level of the student at the start above the level of B1 European competence.	10	LO1
6.	Kazakh (Russian) language	The purpose of the discipline is to ensure high - quality mastery of the Kazakh language from the point of view of national culture as a means of social, intercultural, professional communication by forming communicative competence in all types of speech activity in accordance with the qualification level A2, B1, B2, C1 for students studying the Kazakh language as a foreign language at the basic level A1. Establishes communication in oral and written forms in the Kazakh language to solve the tasks of understanding the lexical and grammatical system, information in the text, social and household, cultural, socio-political, professional, personal communication	10	LO1
7.	Physical training	Studies the features of physical culture and sports. Reveals the main forms of physical culture in the educational and extracurricular time. It is aimed at the formation of a healthy lifestyle, personality of the student, his physical perfection and self-regulation	8	LO1
<b>Cycle of general education disciplines</b> <i>Optional component</i>				
8.	Economics and entrepreneurship	The purpose is to familiarize students with the economic problems of modern society, the formation of economic thinking and gaining knowledge in the field of theoretical foundations and practical skills in the field of entrepreneurship. It is focused on the formation of students' comprehensive understanding of the laws of the functioning of the economy, obtaining business education aimed at acquiring applied competencies in various fields of entrepreneurial activity, reveals the features of creating and successfully running their own	5	LO1



		business.		
	Ecology and life safety basics	Purpose – to form knowledge on the basics of ecology and life safety, allowing to analyze environmental processes, assess the socio-ecological consequences of anthropogenic activities, methods and technologies of protection in emergency situations. Develops skills to assess the impact of environmental factors on human health; predict environmental processes for planning and implementing measures to improve life safety; make decisions in adverse environmental and emergency situations, taking into account the possible consequences of accidents, catastrophes, natural disasters.		
	Basics of law and anti-corruption culture	The aim is to familiarize students with the main branches and institutions of law, the basics of an anti-corruption culture, as well as the laws of the emergence, development and functioning of the state and law. The course forms the skills of an anti-corruption culture and a high level of theoretical knowledge about the main functions of law in the state and society, its impact on the development of law-based state, civil society.		
	Methods of scientific research	The goal is to form knowledge about the principles, technologies, practical methods and techniques of conducting scientific research based on modern achievements of scientists. Forms the basic foundations of scientific culture and ethics, flexible perception of scientific texts, skills of effective application of acquired knowledge in planning and organizing research work, the ability to analyze and summarize research results.		
	Ilyastanu	The purpose of the discipline is to develop a deep-thinking personality with high aesthetic taste, appreciating literature, art, traditions, culture and language of the Kazakh people through a deep and comprehensive study of the works of Ilyas Zhansugurov. Forms an understanding of the importance of the works of Ilyas Zhansugurov in the development of the Kazakh literary language; skills of intellectual and creative thinking, the ability to cherish the values of national and spiritual heritage.		
	Fundamentals of Financial Literacy	The course "Fundamentals of Financial Literacy" is aimed at gaining knowledge and skills in the field of personal finance management. Also, as part of the course, students will learn how to use in practice all kinds of tools in the field of finance, save and increase savings, plan a budget competently, learn how to analyze financial information and navigate financial products to choose an adequate investment strategy.		
<b>Cycle of basic disciplines University Component</b>				
1.	Algorithms and	The course examines basic, classical algorithms and	6	LO5



	data structures	data structures used in programming. The principles of constructing and describing algorithms, the concepts of complexity and performance of algorithms, and their main classes are considered.		
2.	Introduction to SMART Technologies	The discipline provides training based on smart technologies, the content of the course under study contributes to the implementation of smart technology, focusing on the personal qualities of technology. The implementation of the concept of "advanced" smart learning through the introduction of a practice-oriented approach to the presentation of the material is proposed. The relevance of the research course indicates the formation of a new modern technology of education, which allows to improve the quality of professional training of students.	5	LO4
3.	Advanced Python Programming	Algorithms and data structures in Python programming, the syntax of a modern programming language, control operators, functions, procedures and working with files are studied. The basic principles of the development of program texts and their translation in modern programming environments are considered. The basic principles and skills of designing programs with a multi-window interface, methods and ways to eliminate errors if they are present in the process of writing algorithms and program codes are given. Advanced Python programming using a systematic multitasking approach, a file system, interprocessor interaction and error handling are explored.	5	LO3
4.	Professional terms in the field of SMART technologies	The discipline is studied in English with the necessary and sufficient level of communicative competence, which will allow you to use a foreign language in various areas of the official business sphere, professional activity, in scientific and practical work, in communication with foreign partners, for self-educational and other purposes.	5	LO11 LO3
5.	Probability and statistics in an intelligent system	The course teaches you to study the patterns of random phenomena and their properties, and use them for data analysis. As a result of studying this discipline, students will know the basic concepts of probability theory and mathematical statistics and their properties, as well as be able to use probabilistic models in solving problems, work with random variables, calculate sample characteristics, and evaluate the reliability of statistical data.	4	LO8
6.	Fundamentals of artificial intelligence	The discipline is aimed at studying the basic concepts, methods and algorithms underlying the creation and application of artificial intelligence. In this course, students will study the theoretical foundations of machine learning, neural networks, natural language processing algorithms and computer vision. They will also get acquainted with the ethical, social and legal aspects of the use of artificial intelligence in various spheres of life	5	LO6



7.	Architecture and organization of computer systems	Formation and consolidation of general cultural and professional competencies in the field of construction, organization and research methods of computer systems and networks for various purposes. The discipline considers architectures and parallelism of calculations, evaluation of the performance of computing systems, multi-program mode of operation of computers, increasing the efficiency of RAM.	5	LO9
8.	Information systems security	Studies the ways of organizing information protection in computer networks; means of protecting data from the destructive effects of computer viruses; basic software methods of information protection when working with computer systems and organizational measures and techniques of antivirus protection.	6	LO9
<b>The cycle of basic disciplines</b> <b>Component of choice</b>				
1.	Java Programming	Studying the basic concepts, types and characteristics of modern Java technology software; basic concepts of the Java platform; various methods of classification and design principles of modern operating systems; NetBeans development environment; features of the Java object-oriented language; basic user interface objects; basic techniques for working with packages.	5	LO5
2.	Programming in Kotlin	The course is dedicated to learning the Kotlin programming language, an advanced language for designing various kinds of applications. The basic principles of imperative (a program as a sequence of commands, composing expressions, assigning to variables) and structural (what parts a program consists of, in what sequence and how they are executed) programming are given, as in the study of other languages.	5	LO5
3.	General physics	This discipline is the fundamental science of nature. Students will study the natural scientific method of cognition, its possibilities and limits of applicability. Students learn to conduct experiments in the process of learning about nature.	4	LO4
4.	Computational Physics	When studying this discipline, students will study the modeling of physical phenomena and processes, the role of experiment and theory in the process of understanding nature, physical quantities, measurement errors of physical quantities, physical laws, the limits of applicability of physical laws, the concept of the physical picture of the world.	4	LO4
5.	Electronics	The course is aimed at developing students' theoretical and practical knowledge in the field of electrical and electronic circuits. The course examines the basic laws of electronics, as well as the principles of operation of various electronic components. As a result of mastering the course, students will be able to design, debug and manufacture simple electronic devices.	5	LO4
6.	Methodology of writing scientific publications	The main content of the course reflects the competency-based orientation of preparing students for active participation in modern intellectual technologies, which	5	LO3



		involves the possession of the skills and abilities of research activities, from the preparation of writing a scientific article to writing a scientific work and up to its public defense, as well as in connection with the search for sources of funding for various research projects.		
7.	Development of electronic courses	The discipline is aimed at studying the methods of preparation and use of electronic courses in the educational process; technologies for the collective creation and sharing of electronic documents and audio-video materials for their use in the educational process and scientific research.	5	LO3
8.	C/C++ Programming Technologies	When studying the discipline, students will acquire the skills to develop complex programs using modern tools for describing and supporting projects at an abstract level, master modern technologies for creating programs in a procedural-oriented language using object-oriented programming methodology.	5	LO5
9.	C#. Programming in a high level language	When studying the discipline, students will acquire the skills to develop complex programs using modern tools of the high-level C# language, master modern technologies for creating programs in the C# programming language, and will be able to test and verify programs.	5	LO5
10.	Modeling of information processes and systems	The discipline considers the main classes of models and modeling methods, the principles of building models of information processes, methods of formalization, algorithmization and implementation of models using modern computer tools; methods for conducting computational experiments using simulation techniques.	5	LO6
11.	Mathematical and computer modeling	The discipline gives students an idea about modeling as a method of scientific knowledge, about using a computer as a research tool. Considers the basic concepts and properties of models; general principles of computer modeling; model building technology.	5	LO4
12.	Startups and technology entrepreneurship	While studying the discipline, each student participates in the creation of a startup. Trainees gather in groups and make projects in teams. The course is designed to help students develop their IT competencies, teamwork and business skills. The training program covers the entire process of creating a startup, starting with the search for an idea and ending with the release of a product to the market.	5	LO6
13.	SMART Technology Management	Be able to use project management tools at various stages of the project life cycle, to make a qualitative and quantitative assessment of project risks, to determine the effectiveness of the project	5	LO6
14.	Digital animation technology	Introduces the student to the basic digital technologies necessary for the implementation of projects in various areas of design. Forms the initial skills of using application programs in the field of raster, vector and 3D graphics; animation; video and audio editing; web design, presentation graphics, etc.	5	LO11
15.	Modeling in 3D Max	Considers the basics of modern three-dimensional graphics and animation, their development of the principles of work and the basics of modeling. An important task of mastering	5	LO11



		the discipline is to obtain solid knowledge and acquire skills in the use of new technologies for collecting and processing spatial data, creating three-dimensional objects.		
16.	Vector and bitmap graphics	Provides theoretical study and practical development of the basics of computer graphics, the study of computer technologies for processing graphic information, since The professional activity of a modern specialist in the field of information technology is associated with the widespread use in practice of various methods of computer processing of graphic information.	5	LO11
17.	Engineering and computer graphics	The discipline includes three sections: descriptive geometry, engineering graphics and computer graphics. In descriptive geometry questions about the subject and method of descriptive geometry are considered. Engineering graphics considers issues of design documentation, drawings. In the section on computer graphics, work in the graphics program AutoCAD is studied.	5	LO11
18.	Intelligent data analysis	The discipline of Data Mining studies methods, algorithms and software designed to extract knowledge from large amounts of data. The study of intellectual data analysis makes it possible to solve complex data analysis problems, draw informed conclusions and make effective decisions in various fields.	5	LO5
19.	Introduction to data analysis	In this course, attention is paid to all stages of solving Data Analysis problems. The course covers the basics of mathematical algorithms for data analysis so that students can choose the right tools; introduces students to methods for analyzing one-dimensional, two-dimensional and multidimensional data.	5	LO5
The cycle of profiling disciplines The university component				
1.	Web Programming	Mastering the discipline "Web programming" is for students to gain knowledge about programming on the Internet, to form students' skills and abilities to work with WEB pages and effectively combine elements created using various technologies.	6	LO9
2.	Mobile App Development	Within the framework of the discipline, the main attention is paid to the design features of the user interface and the development of applications for mobile devices on the IOS platform. Students will learn how to create modern, high-performance applications of both general and narrow orientations, the interface of which will take into account the characteristics of users, their needs, as well as the conditions of use.	5	LO5
3.	Development of corporate applications	To know the tools and methods of designing the IP architecture; tools and methods of verifying the IP architecture; IP capabilities; the subject area of automation; architecture, device and operation of computer systems; communication equipment; network protocols; fundamentals of modern operating systems; fundamentals of modern database management systems; device and operation of modern IS; modern standards of information	5	LO5



		interaction of systems; software tools and platforms of information technology infrastructure of organizations; modern approaches and standards of organization automation		
4.	Computer networks	He will introduce technologies for integrating local area networks into the global Internet and data transmission in the global network; the functionality of communication equipment and technologies for their implementation; means of analyzing traffic in networks and methods of minimizing it; the basics of designing local area networks and their integration into global networks.	5	LO6
5.	Web application development	The discipline is designed to improve web application development skills, will allow you to study markup languages (HTML, XML) and technologies related to (CSS, XHTML, AJAX), basic concepts of server-side programming (PHP, JSF), client-side programming using scripting languages, create HTML documents containing simple scripts; develop server applications.	5	LO10
6.	Advanced Databases (NoSQL)	Methodology of database design for NoSQL systems. The approach is based on NoAM (NoSQL Abstract Model), a new abstract data model for NoSQL databases that uses common features of various NoSQL systems and is used to define a system-independent data representation application. In general, the methodology aims to support the scalability, performance, and consistency needed for next-generation web applications.	6	LO11
7.	SMART Systems Administration	The discipline studies the principles and methods of management and maintenance of intelligent systems, as well as introduces the basics and architecture of intelligent systems, software for intelligent systems.	5	LO12
<p style="text-align: center;"><b>The cycle of core disciplines</b>  <b>Component of choice</b></p>				
1.	SMART Systems Security	Describes the basics of information security and information protection; principles of cryptographic transformations; typical hardware and software tools and systems for protecting information from unauthorized access to a computer environment; regulatory and legal support for information security; methods and means of protection.	5	LO6
2.	Wireless communication and networks	This course provides a detailed introduction to the IT industry and an in-depth study of personal computers, hardware, and operating systems. Students study the operation of various hardware and software components and the best methods of routine maintenance, protection and safety. In practical laboratory classes, students learn how to assemble and configure computers, install operating systems and software, as well as find and fix hardware and software malfunctions.	5	LO6
3.	Big Data and Cloud Computing	The study of the discipline provides for the training of scientific and pedagogical personnel in the field of ICT and managers, analytical specialists in demand in IT companies and large manufacturing enterprises, where it is necessary	5	LO9



		to regularly analyze large amounts of data, who are able to build processes for optimal data collection, operational data processing, data analysis, optimization of business processes, forecasting consumer behavior, analysis of statistical indicators, risk analysis, development of business solutions.		
4.	Blockchain technology	The purpose of mastering the discipline is to promote the formation of students' ability to independently navigate modern financial instruments and technologies, use them in practical activities when evaluating financial innovations, the possibilities of using cryptographic methods and blockchain technology.	5	LO9 LO5
5.	Software development methodology	The content of the discipline is aimed at studying the concepts, methodologies and methods of programming. This course aims to teach students the popular principles, tools and techniques used for effective software development. Requirements analysis, UML, object-oriented analysis, design and programming, use of application programming interfaces (APIs), software maintenance, project management	5	LO5
6.	Programming in the ARDUINO environment	The discipline is aimed at gaining knowledge and skills in the field of microcontroller programming. System analysis of the applied area, formalization of solving applied problems and processes of information systems; development of projects for automation and informatization of applied processes and creation of information systems in applied areas; performing work on the creation, modification, implementation and maintenance of information systems and managing these works.	5	LO5
7.	Modeling neural networks	The need for this course is due to the fact that students have a holistic understanding of the basic concepts and algorithms of mathematical models based on neural networks and the main methods of their hardware and software implementation and application of the obtained models to solve practical problems such as forecasting, learning, pattern recognition, robotics, effective parallelism.	6	LO6 LO7
8.	Neural Network Administration	The discipline studies the complex task of managing the lifecycle of neural networks, covering their design, development, deployment, monitoring, optimization and maintenance.	6	LO6 LO7
9.	Internet of Things	The content of the discipline is aimed at studying the basic technologies of the Internet of Things, software and hardware for context perception; methods of programming Intel Edison devices in Python; principles of building IoT class systems; solve practical issues of planning, design, development, integration and operation of IoT class information systems.	5	LO7
10.	Machine Learning	Formation of students' theoretical knowledge and practical skills on the basics of machine learning, mastering of tools, models and methods of machine learning, as well as acquisition of skills of a data scientist and developer of	5	LO4 LO7



		mathematical models, methods and algorithms of data analysis		
11.	Digital processing of video and audio information	Examines the theoretical and practical foundations of digital audio and video data processing based on multi-stage signal sampling, as well as training in basic applications of digital signal processing in multimedia systems	5	LO5
12.	Hardware and software video editing	It is aimed at studying the basics of encoding audio-speech messages, images; design methodology and application of digital encoders in multimedia systems; modern software for capturing audiovisual data; interface and elements of the Adobe PremierPro software product	5	LO10

### 2.3 Structure of the educational program

The structure of the educational program was developed in accordance with the State Mandatory Standard of Higher and Postgraduate Education (Order No. 2 of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022)

### 2.4 Additional educational programs (Minor)

The student, when determining the individual trajectory of training within the framework of the elective component, selects disciplines according to the main educational program (Major) and (or) according to the additional educational program (Minor).

The list of Minor programs, their brief description, the composition of disciplines and the resulting learning outcomes are contained in the Catalog of additional educational programs (Minor).

### 2.5 Innovative technologies and teaching methods used in the educational process

In order to form the key competencies of the graduate and the results of training in the OP 6B06102 - Information Systems, the teaching staff uses the following innovative technologies and teaching methods:

- ICT (information and communication technologies: Padlet, Kahut testing),
- Case study, design, portfolio, SWOT analysis, associogram,
- Critical thinking technologies (Venn diagram, JIGSAW, brain attack, association, ZOOM),
- Work in small groups (team).
- Design technology.
- Analysis of specific situations (case study).
- Role-playing and business games.
- Modular training.
- Contextual learning.
- Development of critical thinking.
- Problem-based learning.
- Individual training.
- Advanced independent work.
- Interdisciplinary training.
- Experience-based learning.

In the case of restrictive measures, the introduction of a state of emergency, the occurrence of social, natural and man-made emergencies, the organization of the educational process can be implemented using distance learning technologies online or in a mixed format. Online training sessions provide for the process of educational interaction in real time: video conferences (GoogleMeet, Skype, Discord, MOODLE, ZOOM, Google Classroom, Microsoft Teams, Hangouts, Cisco WebEx Meetings, etc.).



## **2.6 Features of the implementation of the educational program for students with special educational needs**

If there are persons with special educational needs in the students contingent in the educational program, this educational program is adapted to the special educational needs of such students.

A special procedure for the development of the discipline "Physical culture" is established for persons with special educational needs taking into account the state of their health. The choice of places of practical training for persons with disabilities is carried out taking into account the state of health of students and accessibility requirements. Conducting current, intermediate and final certification at the University takes into account the individual psychophysical characteristics of persons with disabilities. Students with special educational needs are provided with printed and (or) electronic educational resources in forms adapted to limit their health.

Individual support is provided or the social adaptation of students with special educational needs, which is continuous and comprehensive. Support of students with special educational needs is determined by the goals, content and methods of the educational process, aimed at preventing emerging problems of educational adaptation, preventing the timely formation of the necessary competencies.

Support includes:

- organizational and pedagogical support, which is aimed at monitoring the study of students with special educational needs in accordance with the schedule of the educational process in an inclusive learning environment;

- psychological and pedagogical support, which is carried out for students with special educational needs, having problems in learning, communication and social adaptation, is aimed at the study, development and correction of the student's personality and the adequacy of the formation of competencies, using psychodiagnostic procedures, psychological prevention and correction of personal distortions;

- preventive and health support, which provides for the solution of tasks aimed at improving the adaptive capacity of students with special educational needs;

- social support, solving a wide range of tasks of a social nature, on which depends the successful study of students with special educational needs. It includes assistance in solving household problems, living in a hostel, transport issues, social payments, allocation of material assistance, organization of leisure, summer recreation, their involvement in student self-government, organization of volunteer movement, etc.



### **3. PROVISION OF THE EDUCATIONAL PROGRAM**

#### **3.1 human resources**

The educational program is staffed with pedagogical and teaching staff in accordance with the Order of the Minister of Education and Science of the Republic of Kazakhstan dated January 5, 2024 No. 4 "On approval of qualification requirements for educational activities and a list of documents confirming compliance with them."

#### **3.2 Material and technical base**

The University has 3 academic buildings, an educational and laboratory complex, a library, a military department, 3 dormitories, an educational and recreational training ground "Kulager" on Lake Balkhash, a sports and educational training ground "Karlygash", a stadium for 1000 seats.

The material and technical base of the educational institution is completed in accordance with the Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated January 5, 2024 No. 4 "On approval of qualification requirements for educational activities and a list of documents confirming compliance with them."

#### **3.3 Information and library support**

Completed in accordance with the order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated January 5, 2024 No. 4. Registered with the Ministry of Justice of the Republic of Kazakhstan on January 8, 2024 No. 33892 "On approval of qualification requirements for educational activities of organizations providing higher and (or) postgraduate education, and a list of documents confirming compliance with them."

#### **3.4 Social resources**

For those who want to improve their qualifications or get additional education, the university has a Center for Advanced Training and additional Education. On the basis of the center, university students can take free language training in English and prepare for the exam to confirm the international level of English language proficiency – IELTS.

To develop the entrepreneurial competencies of students and young scientists, the University has a department of science and commercialization of scientific projects, a Startup Academy. The Startup Academy provides all the necessary infrastructure for the youth of the Zhetysu region to develop innovative and entrepreneurial activities and increase the number of small and medium-sized businesses. The Academy conducts training trainings and seminars, is engaged in purposeful search, selection and development of startup projects, as well as consulting support on the development of startups and measures of state support for entrepreneurship, organization of mentoring, providing expert support, conducting grant competitions.

In their free time, students can study for free in gyms and in sections for several sports. Active work in this direction is carried out by the University Sports Club, which is engaged in the formation and promotion of the values of a healthy lifestyle, uniting students into teams to demonstrate their needs and abilities in a freely chosen sport, organizing and conducting physical culture, sports and wellness events, organizing youth participation in sports competitions of various levels.

The sports base of the university is a multifunctional stadium with a standard football field, with sectors for long jumps, grenade throwing and treadmills, boxing, gymnastics, wrestling halls and a gym equipped with modern sports equipment.

The University has created favorable conditions for the formation of competencies of social interaction, active life position, civic consciousness, self-organization and self-government, system-activity character.

The Department of Educational and Social Work and the Youth Center are engaged in the development of creative activity of students in the socio-cultural environment of the University. In order to reveal the diverse creative abilities of students, the university operates: the Department of the Assembly of the Peoples of Kazakhstan; dance and vocal and instrumental ensembles, student theater, debaters club, volunteer clubs, KVN teams, literary, intellectual clubs, labor association "Zhasyl El", association of public police assistants "Zhas Kyran", military-patriotic club "Erlik" and others.



**4. PLAN  
FOR THE FURTHER DEVELOPMENT  
OF THE EDUCATIONAL PROGRAM**

<b>№</b>	<b>Event content</b>	<b>Realization term</b>	<b>Responsible person</b>
<b>Educational and methodical direction</b>			
1	Development of lecture material, preparation of educational material for practical and laboratory studies, development of guidelines for SRO	2024-2028	PTS
2	The development of work programs of practices and guidelines for the implementation of theses	2024-2028	PTS
3	Development of EMCD	2024-2028	PTS
4	Organization and holding of methodical seminars, trainings, master classes	2024-2028	PTS
5	Development of test tasks and questions	2024-2028	PTS
<b>Research direction</b>			
1	Publication of textbooks, teaching aids, monographs	2024-2028	PTS
2	Development and implementation of innovative technologies in the educational process	2024-2028	PTS
3	Participation of faculty members in regional, republican and international conferences	2024-2028	PTS
4	Publication of articles in scientific journals database KKSON, RISC	2024-2028	PTS
5	Publication of articles in scientific journal databases Scopus, Thomson Reuters	2024-2028	PTS
6	Fulfillment of scientific projects of the GF MES	2024-2028	PTS
7	Creation of electronic textbooks, patents, copyright certificates, acts of implementation based on the results of research	2024-2028	PTS
8	Participation of students in competitions, competitions, research grant programs, start-ups	2024-2028	PTS
<b>Educational direction</b>			
1	Participation of students in various activities of the university, faculty, department	2024-2028	PTS
2	Visiting various sports clubs by students	2024-2028	PTS
<b>Advanced training</b>			
1	Participation of faculty in scientific seminars for the purpose of advanced training	2024-2028	PTS
2	internship in scientific centers, universities of the Republic of Kazakhstan, far and near abroad	2024-2028	PTS
3	Training courses and language training	2024-2028	PTS
<b>Career guidance</b>			
1	Participation in the organization of university's open days	2024-2028	PTS
2	Publication of information on the university's site and in the newspaper on the activities of the faculty	2024-2028	PTS



