6B06102-INFORMATIONAL SYSTEMS

The purpose of the educational program: Training of specialists capable of designing and developing analytical systems in the field of education and information and communication technologies

1.2. VISION, MISSION, PROGRAM GOAL, CORE VALUES,UNIVERSITY GRADUATE ATTRIBUTES.

Vision:
An intelligent platform that develops teachers who can manage in a rapidly changing world.
Mission:
Developing teachers who are leaders in creating, developing and disseminating advanced educational knowledge and values for the benefit of the country and the world.
Program goal:
The university aims to become a hub of innovative methods of teaching, teaching and research, as well as the development of rural education in Central Asia.
Core values:
Integrity, dedication, care of others
Attributes of a University graduate:
• Self-taught, able to reflect and investigate their practice
• Have moral and ethical qualities and responsibility
• Have deep subject, digital knowledge and a broad intellectual outlook
• Creative and critically - minded, collaborative and communicative
• Practice leadership in teaching and learning, and are adaptable to rapidly changing environments
• Diverse, inclusive and for equal opportunities in society

1.3. JUSTIFICATION OF THE EDUCATIONAL PROGRAM

The Relevance of the EP. The bachelor's degree program in the educational program «6B06102 Computer Science» is determined by the results of training, which are formed on the basis of Dublin descriptors and are expressed through the competence of General, methodological and subject training.

The educational program was developed considering the generalization of modern domestic and world experience of training in this field, author's and collective scientific achievements, and educational and methodical developments in the field of specialization, requirements of employers and demands of the labour market.

Students master the latest software development technologies, learn to create professional websites and master computer graphics. The student will acquire knowledge and skills for developing, designing, implementing and supporting modern corporate information systems, including mathematical, software, linguistic and information systems.

Market demand.

Statistical analysis was performed on the basis of an official website "http://stat.gov.kz/official/industry/11/statistic/5" National collection "education Statistics of the Republic of Kazakhstan" published in 2018 JSC "Information-analytical centre", and the official response of the regional directorates of education of Kazakhstan. According to the data, there are more than 800 educational institutions of technical and vocational education (hereinafter – TVE) in the Republic of Kazakhstan, including more than 450 public and more than 300 private. At the same time, more than 300 specialists, and students of higher and postgraduate education for 2017-2022 amounted to 808.4

thousand people, including 70 thousand people in IT specialities, which is a percentage of 8.7%. specialists in support of VPS (virtual dedicated server), web programmers, and designers.

The state educational order for the field of education "6B06 Information and Communication Technologies", funded from the republican budget, for the 2022 – 2023 academic year was-7199.

In the structure of the information technology market (hereinafter – IT) in Kazakhstan, the sector of IT equipment sales is dominant in the total volume, which is a reflection of the increased demand for computers, network and peripheral computer equipment that accompanies the process of Informatization of Kazakhstan's society.

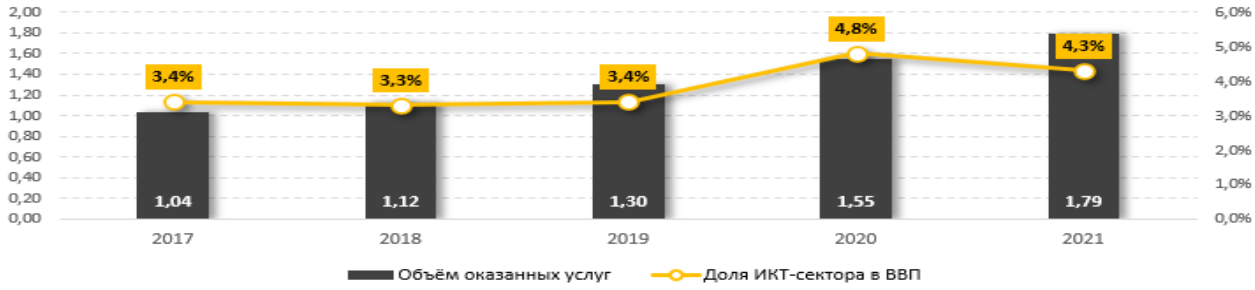
In Kazakhstan, the number of jobs for IT professionals has increased by more than a third every year over the past two years. However, despite a sufficient number of applicants, the market still lacks supply. In search of experienced IT specialists, employers are willing to pay significantly more than employees in other industries, reports inbusiness.kz, based on Finprom information.

Favourable income dynamics of IT-specialists is based on the growing digitalization of the economic sector. The volume of the Kazakhstan market in the field of information and communication technologies (including the telecommunications sector) increased by 72% from 1 trillion tenge to 1.79 trillion tenge between 2017 and 2022. Of these, 515.1 trillion tenge went directly to computer programming services last year. This is almost three times more than in 2017 (183.9 billion tenge).

According to the Ministry of Digital Development, Innovation and Aerospace Industry of Kazakhstan, dozens of large technology companies, including Playrix, TinkoffBank and Nexters, have moved to Kazakhstan due to the geopolitical crisis. The total capitalization of the relocated companies exceeds $27 billion. The total capitalization of the relocated companies exceeded $27 billion.

Distribution of vacancies in the IT industry computers, Internet by regions of Kazakhstan. As can be seen in the diagram, in Kazakhstan, the largest number of vacancies in the IT industry are computers, the Internet is open in Almaty. Astana is in second place, and the Karaganda region is in third place.

Рынок информационно-коммуникационных технологий РК (трлн тг)



Объём оказанных ИКТ-услуг по укрупнённым группам (млрд тг)

	2021	2017	Прирост
Услуги по изданию ПО	2,9	2,9	1,2%
Услуги по компьютерному программированию, услуги консультационные и аналогичные	515,1	183,9	180,1%
Услуги по обработке данных размещение приложений (прикладных программ) и связанная с этим деятельность, деятельность веб-порталов	189,7	79,4	138,8%
Услуги по ремонту компьютеров и оборудования связи	42,5	19,2	121,1%
Услуги связи	1 041,3	752,3	38,4%

На основе данных Бюро национальной статистики АСПиР РК **Finprom.kz**

According to the data of JSC, "Center for Development of Labor Resources" (subordinate organization of the Ministry of Labor and Social Security of the Republic of

Kazakhstan), the labor market of IT-specialists in Kazakhstan has 69.5 thousand employees. So many professionals are registered through the Unified System of Employment Contract Records. According to analysts, the Human Resources Development Center, the number of programmers and IT analysts may be more than 10%, because the obligatory registration of employment contracts in the Unified System of Labor Contracts in Kazakhstan is valid only from May 2021, Therefore, older treaties may not be included. Moreover, there is no data on the self-employed in the system.

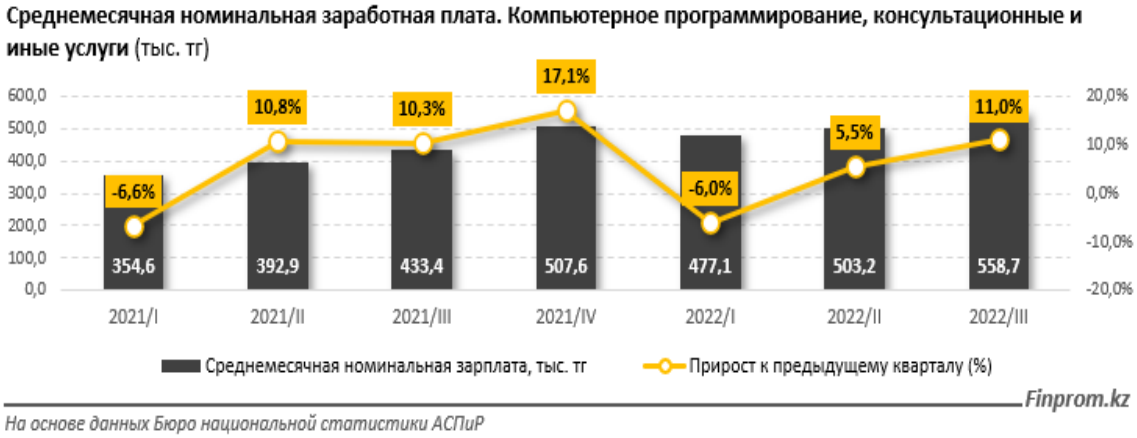
Analysis of the data of the hh.kz platform shows that the number of vacancies of IT-specialists at this private recruiting site in the first half of 2022 increased by 41% per year, reaching 14 thousand, and at the end of January-June this year the growth amounted to another 36%, up to 19 thousand. vacant jobs. Half of them went to Almaty, 24% to Astana.

The need for personnel exceeds the supply by 6.1%. Considering the projected growth of the market and the current state of training of young specialists by institutions of higher and secondary vocational education. The Ministry of Labor has developed a vision of the future of the labor market of Kazakhstan, taking into account global challenges and emerging trends in the country.

The population is projected to increase to 19.8 million in 2025, or 1.6 million (9% compared to 2023). The workforce will increase by 6.7% to 9.8 million (9.0 million in 2023). Given the technological modernization of the economy, the need for human resources by 2025 will be more than 570,000. Medium- and high-skilled jobs are projected to increase by 766,000.

Official statistics confirm that the income of programmers in Kazakhstan is growing at a high rate.

The average monthly nominal salary in the IT sector in the third quarter of this year, compared to the same period in 2022, increased by 28.9%, from 433.4 thousand to 558.7 thousand tenge.



1.4. FEATURES OF THE EDUCATIONAL PROGRAM

Academic mobility	Aktobe State Regional University named after K. Zhubanov - Treaty 1, from 28.02.2018. South Kazakhstan State University named after M.O.Auezov - Agreement dated 29.09.2016. KSU named after M.O. Korkyt Ata - Agreement from 2.03.2018. Mississippi Valley State University (USA) - Memorandum dated 08.04.2014. Western International College London (UK) - Memorandum dated 10.05.2018.
Dual degree program	Mississippi Valley state University (USA) - Memorandum Date 08.04.2014., Western International College of London (UK) - Memorandum Date 10.05.2018.,
Supplementary Education (Minor)	По образовательной программе «6B06102-Информационные системы» рассматривается получение дополнительного образования: **Information systems in education** - information technologies in education have a huge didactic potential. The student is not only a subject of the pedagogical process, but also a specialist researcher who is able to independently and creatively, in accordance with his capabilities, find and solve problems of humanitarian and scientific interaction with the outside world, draw conclusions and give the necessary explanations.

Coincidence with similar surveys of leading universities of the far and near abroad Imperial College London – 61%, National University of Singapore – 27%, Oxford University – 41%

1.5. POTENTIAL CAREER PATHS FOR GRADUATES

A graduate of the educational program "6B06102-Computer science" has the opportunity to find a job as a programmer, a WEB programmer, an organizer of databases of information systems, a system expert, an administrator of computer networks, a specialist in the field of information security and information protection, a specialist in other positions related to the information technologies used in the industry.

1.6. AREAS OF PROFESSIONAL COMPETENCE

- scientific and technical: systematically study scientific and technical information, as well as holistic experience, find solutions to the problems under study with the compilation of models and algorithms, simulate technological processes using computer programs and computer-aided design tools, work on new innovative projects and implement the results of scientific research.

- Expert-analytical: collects processes and analyzes information. Writes queries to databases, identifies trends, checks hypotheses, and conducts tests and, based on the results, draws certain conclusions that help solve a particular problem.

- Information and communication: can share tasks in teamwork, is able to present himself and the results of his work in a professional environment.

1.7. LEARNING OUTCOMES OF THE EDUCATIONAL PROGRAM

LO 1 - Students recognize themselves as citizens of the world and responsible members of the digital society, promote the safe use of digital information and technologies, compliance with ethical and legal norms.
LO 2 – They possess high-level critical and creative thinking skills, are capable of self-regulation and reflection to solve professional tasks
LO 3 – Demonstrate knowledge and compliance with ethical and legal norms in research and the use of digital technologies. Apply security measures when working with digital information and data protection, promote active, safe and ethical use of digital resources.
LO 4 – Uses artificial intelligence approaches, methods of big data analysis and processing to solve professional tasks of cloud technologies.
LO 5 – design web applications and educational systems with ergonomic user interface based on flexible methodology and principles of network security.
LO 6 – Designs and analyzes software using modern algorithmic and mathematical methods.
LO 7 – Develops information educational systems using modern methods of system and visual programming.
LO 8 – Manages IT projects, computing and information systems in the course of professional activity, applies methods of information data protection.
LO 9 – Uses digital literacy and interdisciplinary knowledge in solving professional tasks and determines the cause-and-effect relationships of natural science processes and phenomena.

Matrix comparing EP learning outcomes (LO) with the attributes of the graduate (AG)

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
AG1		+	+	+	+	+	+	+	+
AG 2	+		+						
AG 3	+	+		+		+			+
AG 4	+	+	+						
AG 5	+		+		+				+
AG 6		+		+	+	+	+	+	+

1.8. REGULATORY REFERENCES

The programme was developed on the basis of the following legal and regulatory acts:
1) Professional standard «Management and Design of Computer Hardware and Embedded Systems» approved by the order of the Chairman of the Board of the National Chamber of entrepreneurs of the Republic of Kazakhstan «Atameken» No. 259 dated December 24, 2019.

2) SQF information, Informatization, communications and telecommunications, approved by the minutes of the meeting of the Industry Commission in the field of information, Informatization, communications and telecommunications dated December 20, 2016 No. 1.
3) Professional standard « Creation and management of information resources » approved by the order of the Chairman of the Board of the National Chamber of entrepreneurs of the Republic of Kazakhstan «Atameken» dated January 1, 2016.
4) Professional standard « Business analysis in information and communication technologies» approved by the order of the Chairman of the Board of the National Chamber of entrepreneurs of the Republic of Kazakhstan «Atameken» dated January 1, 2016.
5)SCES 20.07.2022 State mandatory standards of higher and postgraduate education. Approved by the Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2 (with amendments and additions dated 02/20/2023 No. 66)