MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN
NON-PROFIT JOINT STOCK COMPANY
"GUMARBEK DAUKEEV ALMATY UNIVERSITY OF ENERGY AND COMMUNICATION"
Institute of Automation and Information Technologies

"Agreed"
Co-founderand technical director
ofLLP "itpartner.kz"
_____Kemelbekov I.
«__»_____2025

"Approved"
Rector of AUPET
_____G. Nygymetov
«23» 05 2025

MODULAR EDUCATIONAL PROGRAM
DIRECTION 6B06104 – "Artificial intelligence and data analysis"
HIGHER EDUCATION

Areaofeducation(according to the classifier dated 10/13/2018):6B06 - Information and communication technology
Direction of study (according to the classifier dated 10/13/2018):6B061 - Information and communication technology

Duration of study –3 years
Awarded academic degree: *Bachelor in Information and Communication Technologies*
Qualification level in accordance with the National Qualifications Framework: Level 6.

Almaty 2025

Training trajectories (specialty):
Program Engineering
Data Analysis
Artificial Intelligence

The EP is developed on the basis of: the National Qualifications Framework, Approved by the protocol of March 16, 2016 by the Republican tripartite commission on social partnership and regulation of social and labor relations; Sectoral qualifications framework "Information and communication technologies", Approved by the protocol of the meeting of the Sectoral Commission in the field of information, informatization, communications and telecommunications dated December 20, 2016 No. 1; State compulsory standard of higher education, Approved by the Decree of the Government of the Republic of Kazakhstan dated 08.23.2012 No. 1080 (amended by the decree of the Government of the Republic of Kazakhstan. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018 No. 604. Registered in the Ministry of Justice of the Republic of Kazakhstan from November 1, 2018 No. 17669.); Professional standards or standard projects.

The educational program was developed at the IT Engineering Department.

Headoftheeducationalprogram Amanbaev A.A., Ph.D., associate professor

The EP was reviewed and approved at the meeting of the Department of IT Engineering and AI Department on 04.03.2025, protocol No. 8.

Head of the Department of IT Engineering and AI_____ Utegenova A.

The EP was reviewed and approved at a meeting of the educational and methodical commission of the Institute of Automation and Information Technologies (protocol No. 9 from 12.05.2025).

Head of IAIT _____Fedorenko I.A.

The EP was reviewed and approved by the Scientific and Methodological Council of AUPET(protocol No. 11 dated 23.05.2025).

Listofsymbolsandabbreviations

HE	- Highereducation
STSE	- StateCompulsoryStandard of Education
EQF	- EuropeanQualificationsFramework
NCO	- Nationalclassifierofoccupations
RK	- RepublicofKazakhstan
NQF	- NationalQualificationsFramework
NQS	- NationalQualificationsSystem
GEM	- Generaleducationalmodule
EP	- Educationalprogram
GED	- Generaleducationaldisciplines
CC	- Compulsorycomponent
UC	- Universitycomponent
BD	- Basicdisciplines
PD	- Profile disciplines
IEP	- Individualeducationalpath
SQF	- SectoralQualificationsFramework
PS	- Professionalstandard
PGE	- Postgraduateeducation
ON	- Competencies
LO	- Learningoutcome
CW	- Coursework
CGW	- Calculationandgraphicwork
RWS	- Researchworkofstudents
CED	- Catalogofelectivedisciplines

1. Educationalprogrampassport

№	Fieldname	Notes
1	Code and classification of the field of education	6B06 Information and communication technology
2	Code and classification of training areas	6B061 Information and communication technology
3	Groupofeducationalprograms	B057 - InformationTechnology
4	Nameofeducationalprogram	6B06104 - Artificial intelligence and data analysis
5	Typeof EP	Current EP
6	Purposeof EP	High-quality training of specialists in the field of artificial intelligence and data analysis. The program is aimed at developing skills in machine learning, deep learning, natural language processing, computer vision, as well as teaching students to apply this knowledge to solve practical problems in various fields such as business, medicine, finance and others.
7	ISCE level	ISCE 6 Baccalaureateor its equivalent
8	NQF level	6
9	SQF level	6
10	Distinctivefeaturesof EP	No
	Partneruniversity (JEP)	No
	Partneruniversity (AEP)	No
11	Atlas of new professions	https://www.enbek.kz/atlas/profession/63 The AI technologist. https://www.enbek.kz/atlas/profession/62 Developer of universal AI
12	Thelistofcompetencies	ON-1. Know the methods of scientific research and academic writing and apply them in the studied field. ON-2. Apply knowledge and understanding of facts, phenomena, theories, and complex relationships between them in the studied area. ON-3. Possesses a wide range of lexical and grammatical structures of the language, demonstrates knowledge of social, legal, and ethical norms, as well as the basic elements of sustainable development and anti-corruption culture, and is able to apply this knowledge in professional activities. ON-4. Master the methodology and techniques of economic planning assessment, methods and techniques of planning, personnel management, and investment activities, organization of production, and compliance with safety and environmental rules. ON-5. Apply mathematical, numerical, high-performance computing, decision-making methods, and modeling for various processes. ON-6. Master the physical processes of computer systems and apply architectural solutions in designing information systems and their components. ON-7. Apply innovative ICT and software products, algorithms, and methods of information security in professional activities. ON-8. Master the tools, environment, and modern programming technologies, develop software, functional software for information systems. ON-9. Conduct the design, configuration, testing, and maintenance of computer networks and ensure their security.
13	Learningoutcomes	

		ON-10. Implement artificial intelligence systems, design and develop ergonomic user interfaces, and manage projects. ON-11. To carry out pilot operation of artificial intelligence systems and its implementation, to develop a system for collecting, storing, analyzing, and managing data using BigData, DataMining, and cloud computing technologies.
14	Formoflearning	Full-time, distance
15	Languageoflearning	Russian, Kazakh, English
16	Credits	240
17	AwardedAcademicDegree	Bachelor's degree in the field of Information and Communication Technologies under the educational program "6V06104 - Artificial Intelligence and Data Analysis."
18	Availability of an appendix to the license for the training	License № KZ80LAA00018161 Date of issue 05.05.2020
19	Availability of accreditation of EP	30.04.2025-29.04.2030
	Nameofaccreditationbody	Non-profit organization "Independent agency for accreditation and rating"
	AccreditationDuration	30.04.2025-29.04.2030
20	Informationaboutdisciplines	Information about disciplines of UC/OC GED, BD, PD (Appendix 1)
21	Professionalactivity	industry, science, education, culture, healthcare, agriculture, public administration.
22	Typesofprofessionalactivity	design and engineering; production and technological; organizational and managerical; operational; pedagogical.
23	Modular Curriculum	Given in appendix 2

2. The matrix of correspondence of learning outcomes in the educational program as a whole with the competencies being formed

№	Course Titles	ON-1	ON-2	ON-3	ON-4	ON-5	ON-6	ON-7	ON-8	ON-9	ON-10	ON-11
1	Historyof Kazakhstan	V										
2	Foreign language1	V										
3	Foreign language2	V										
4	Kazakh (Russian) language	V										
5	Kazakh (Russian) language	V										
6	Information and communication technologies (in Englishlanguage)	V										
7	Module of socio-political knowledge(sociology, political science)	V										
8	Module of socio-political knowledge (cultural studies, psychology)	V										
9	Philosophy	V										
10	Physicalculture	V										
11	Module of the University component of a GED (Economics and Law, Entrepreneurship and financial literacy)			V	V							
12	Sustainable development: ethics, inclusion and security			V	V							
13	Fundamentals of Scientific research and academic writing	V		V								
14	LinearAlgebra					V						
15	Calculus I					V						
16	Physics					V	V					
17	Calculus II					V						
18	Probability theory and elements of mathematical statistics					V						
19	Fundamentals of Web Design and Programming							V	V			
20	Operating systems and computer networks						V			V		
21	System Programming						V			V		
22	Deep Learning Models										V	V
23	Python Programming technologies							V	V			
24	Database Systems							V	V			
25	Artificial Intelligence										V	V

26	The basics of Big Data										V	V
27	Simulation modeling										V	V
28	Engineering Design					V	V					
29	Production practice			V	V	V	V	V	V			
	Cycle of basic disciplines (BD)											
30	**Optional discipline 1 (choose 1 of 2)**											
	Basics of algorithmization and programming								V	V		
	Minor											
31	**Optional discipline 2 (choose 1 of 2)**											
	Development of a technological startup								V	V		
	Introduction to Blockchain								V	V		
32	**Optional discipline 3 (choose 1 of 2)**											
	Object-oriented programming							V	V			
	Minor											
33	**Optional discipline 4 (choose 1 of 2)**											
	Programming in Java							V	V			
	Minor											
34	**Optional discipline 5 (choose 1 of 2)**											
	Optimization methods in artificial intelligence					V						
	Mathematical methods in artificial intelligence					V						
	Specialized disciplines											
35	Introduction to the specialty		V						V			
36	Mobile application development technologies							V	V			
37	Cloud technologies and administration of high-performance systems					V						V
38	Pre-diploma practice	V	V	V	V	V	V	V	V			
	Component of choice											
39	**Optional discipline 1 (choose 1 of 2)**											
	Information security and information protection				V			V				
	Cryptographic methods and means of information protection				V			V				
40	**Optional discipline 2 (choose 1 of 2)**											
	Oracle DBMS							V	V			

	Modern DBMS in Corporate Systems							V	V			
41	**Optional discipline 3 (choose 1 of 2)**											
	Artificial Intelligence Systems and Neural Networks										V	
	Development of Expert Systems										V	
	Trajectory (specialization) Software Engineering											
42-1	Internet Entrepreneurship								V		V	
43-1	Development of IoT systems							V	V			
44-1	Programming Arduino microcontroller boards						V		V			
45-1	Management and Administration of ERP Systems						V			V		
46-1	Fundamentals of programming robotic devices						V		V			
47-1	UX/UI Design							V	V			
48-1	Technologies of Game Development Applications							V	V			
	Trajectory (specialization) Data analysis											
42-2	Statistics for data analysis							V	V			
43-2	Data Management							V	V			
44-2	Social Network Analysis						V			V		
45-2	Data Analysis and Machine Learning								V		V	
46-2	Intelligent Data Analysis								V		V	
47-2	Advanced Databases						V			V		
48-2	Virtual and Augmented Reality Technologies										V	V
	Trajectory (specialization) Artificial Intelligence											
42-3	Deep Learning in Python							V	V			
43-3	Image Processing and Computer Vision I										V	
44-3	Image Processing and Computer Vision II										V	
45-3	Natural Language Processing								V			V
46-3	Application of AI in Startup Projects										V	V
47-3	Technologies in intelligent control systems in IoT										V	
48-3	Dahua Video Surveillance Systems								V	V		