MINISTRY OF SCIENCE AND HIGHER EDUCATION
REPUBLIC OF KAZAKHSTAN
NON-COMMERCIAL JOINT-STOCK COMPANY "ALMATY UNIVERSITY OF POWER ENGINEERING AND TELECOMMUNICATIONS" named after Gumarbek Daukeyev
Institute of Information Technologies

«Agreed»
Director of Development
LLP "ICORE-Integration"
_____ E. Galimova
«12» 05 2025

«Approved»
Rector of AUPET
_____ G. S. Nygymetov
«___» _____ 2025 г.

MODULAR EDUCATIONAL PROGRAM
"6B06306 – INFORMATION SECURITY SYSTEMS"
HIGHER EDUCATION

Field of education: 6B06 Information and Communication Technologies
Training direction: 6B058 – Information Security

Duration of study – 4 years
Academic degree awarded – *Bachelor in ICT under the program 6B06306 – Information Security Systems*
Qualification level according to the National Qualifications Framework: *Level 6*

Almaty, 2025

The Educational Program is developed based on:

The National Qualifications Framework, approved by the protocol of March 16, 2016, of the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations;

The Sectoral Qualifications Framework "Information and Communication Technologies", and the Professional Standard "Information Security" (Appendix No. 3 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022);

The Professional Standard "Information Security" (Appendix No. 3 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022);

"Ensuring the Security of Information Infrastructure and IT" (Appendix No. 4 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022);

The Professional Standard "Specialists-Professionals in Information Infrastructure and IT Security" (Appendix No. 11 to the order of the Acting Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 222 dated 05.12.2022);

The State Compulsory Higher Education Standard, approved by the Resolution of the Government of the Republic of Kazakhstan No. 2 dated July 20, 2022, and registered with the Ministry of Justice of the Republic of Kazakhstan on July 27, 2022, No. 28916.

The educational program was developed at the Department of Cybersecurity.

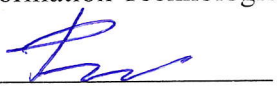
Head of the Educational Program: PhD in Technical Sciences, Professor Satimova E. G.

Participants in the development of the educational program: Doctor, PhD, Associate Professor Begimbayeva E. E., PhD in Pedagogical Sciences, Associate Professor of the Department of Cybersecurity, Berdibaev R. Sh., AUES

The program was reviewed and approved at the meeting of the Cybersecurity Department on April 25, 2025, Protocol No. 9.

Head of the Cybersecurity Department: Begimbayeva E.E.

The program was reviewed and approved at the meeting of the Academic Council of the Institute of Automation and Information Technologies, Protocol No. 9 on May 12, 2025.

Director of IAIT:  Fedorenko I.A.

The program was reviewed and approved by the Academic Council of AUES, Protocol No. 11 on May 23, 2025.

Update in the Program Registry: Status assigned on July 28, 2025.

List of Terms and Abbreviations

HE	Higher Education
SCEC	State Compulsory Education Standard
EQF	European Qualifications Framework
NCO	National Classifier of Occupations
RK	Republic of Kazakhstan
NQF	National Qualifications Framework
NQS	National Qualifications System
GEM	General Education Module
EP	Educational Program
GED	General Education Disciplines
MC	Mandatory Component
UC	University Component
BD	Basic Disciplines
PD	Profiling Disciplines
IET	Individual Educational Trajectory
SQF	Sectoral Qualifications Framework
PS	Professional Standard
PE	Postgraduate Education
CP	Competencies
LO	Learning Outcome
CW	Course Work
CGW	Calculative and Graphic Work
SRW	Student Research Work
CED	Catalog of Elective Disciplines

1. Educational Program Passport

№	Название поля	Примечание
1	Registration Number	6B06100050
2	Code and Classification of Field of Education	6B06 – Information and Communication Technologies
3	Code and Classification of Training Areas	6B063 – Information Security
4	Group of Educational Programs	B058 – Information Security
5	Name of Educational Program	6B06306 – Information Security Systems
6	Type of Educational Program	Active
7	Purpose of Educational Program	The purpose of the educational program "Information Security" is to train highly qualified specialists in information security, capable of administering security mechanisms, promptly responding to security breaches, and solving complex tasks related to the protection, reliable storage, transmission, and processing of information, using modern mathematics, ICT, and hardware/software tools.
8	Level (ISCED)	ISCED 6 – Bachelor's degree or equivalent
9	Level (NQF)	6
10	Level (QCF)	6
11	Distinctive Features	None
	University Partner (SOP)	None
	University Partner (DDOP)	None
12	List of Competencies	ON1. Able to develop comprehensive solutions to test the resilience of applications against external unauthorized access: the resilience of company web applications to attacks; able to implement security controls (code audit, vulnerability scanning, etc.). ON2. Has skills in administering information security event management systems, information protection tools in computer systems and networks, intrusion detection/prevention systems, and monitoring events and incidents. Analyzes the performance, fault tolerance, and information security of computer systems and networks to determine their suitability for practical tasks. ON3. Demonstrates and applies basic knowledge in mathematics, natural sciences, humanities, social-economic, and legal disciplines in an interdisciplinary context; understands methods of production organization and rules of life safety for solving engineering tasks in the professional field. ON4. Possesses skills in ensuring the operability of application and system software using information protection tools, administration, operation, and maintenance of hardware-software information protection systems, and ensuring information security.
13	Learning Outcomes	

		ON5. Able to install and configure information protection tools; perform installation, configuration, testing, and maintenance of technical information protection tools; perform information security control. ON6. Demonstrates knowledge of hardware components, architecture, operating systems of computer systems and networks, their organization and security, configuration of OS security policies, DBMS, software, programming technologies and methods for protecting information and information processes. ON7. Uses various types of information and communication technologies in professional activities: internet resources, cloud and mobile services, software packages for searching, storing, processing, protecting, and distributing information. ON8. Demonstrates knowledge of historical development, traditions, cultural heritage, constitutional system of the Republic of Kazakhstan, competitiveness, and ability for self-development and critical reflection of accumulated experience; forms worldview, civic, and moral positions based on ICT literacy, communication programs in the state, Russian, and foreign languages, and orientation to a healthy lifestyle. ON9. Knows methods of scientific research and academic writing and applies them in ICT; applies knowledge and understanding of facts, phenomena, theories, and complex relationships between them in the ICT field; understands the principles and culture of academic integrity. ON10. Possesses skills in developing and implementing information security systems for enterprises, analyzing and evaluating their fault tolerance, and developing measures for their improvement; uses machine learning and artificial intelligence methods. ON11. Has knowledge of international and national legal acts, standards, and regulations in IT and information security; demonstrates knowledge and understanding of legislation, certification, and standardization in the field of information security in the Republic of Kazakhstan. ON12. Possesses skills in applying cryptographic algorithms, knowledge of their software implementation, cryptographic key management, encryption, antivirus administration, installation and configuration of domain infrastructure systems, cloud technologies and services, programming and cryptographic encryption for information security, firewall configuration, and organization of other cybersecurity measures.
14	Learning Outcomes	See Appendix 1
15	Mode of Study	Full-time, Distance
16	Languages of Instruction	Kazakh, Russian, English
17	Credits	240
18	Degree Awarded	Bachelor in Information Security under EP 6B06306 – “Information Security Systems”
19	License Number	KZ80LAA00018161

	License Issue Date	05.05.2020
	Accreditation	Yes
20	Accreditation Body	Non-commercial Organization “Independent Accreditation and Rating Agency”
21	Accreditation Validity	05.04.2024-04.04.2029
22	Information on Disciplines	Core/Elective, Basic/Professional (Appendix 1)
23	Professional Field	Science, technology, and engineering; ensuring protection of informatization objects against information threats
24	Types of Professional Activity	Operational; design-technological; experimental-research; organizational-administrative

2. Matrix correlating learning outcomes for the educational programme as a whole with the competencies being developed

№	Name of discipline	ON1	ON2	ON3	ON4	ON5	ON6	ON7	ON8	ON9	ON10	ON11	ON12
1	Economics and law, entrepreneurship and financial literacy								V				
2	Administration of the Windows operating system						V						
3	Computer Systems Architecture		V				V						
4	Secure Python Programming						V						V
5	Probability and statistics			V									
6	Discrete Structures			V									
7	Calculus I			V									
8	Calculus II			V									
9	Artificial intelligence										V		
10	Linear Algebra			V									
11	Linux operating system						V						
12	Organizational and legal information security											V	
13	Fundamentals of hardware information protection					V	V						
14	Fundamentals of scientific research and academic writing									V			
15	Programming algorithms and data structures						V						
16	Secure Programming Technologies (Java)	V					V						
17	Technologies of Computer Information Security		V		V								
18	Sustainable Development: Ethics, Inclusion and Safety							V	V				
19	Physics			V									
20	Wireless networks. Huawei Technologies		V				V						
21	Learning about Huawei network technologies		V				V						
22	Computer steganography												V
23	Computer viruses and rootkits	V											V
24	CCNAv7: Introduction to Networks		V				V						
25	CCNAv7: Switching, Routing and Wireless Essentials		V				V						

26	Security of operational systems				V		V						
27	Cryptographic methods and means of information protection												V
28	Fundamentals of database systems						V						
29	Risk assessment and audit of information security systems		V									V	
30	Practical pentesting	V	V									V	
31	Software and hardware information security tools		V		V								
32	Standartization and certificate means of informational safety											V	
33	Database protection technologies		V				V						
34	Administration of domain systems										V		V
35	Big Data Analysis						V				V		
36	Security Operations Center (SOC) Analytics										V		
37	Security issue in WEB and Mobile Applications	V											
38	Introduction to DevSecOps Practices		V		V								
39	Quantum Cryptography												V
40	Computer forensics	V	V										V
41	Cryptanalysis												V
42	Cloud computing. Huawei Technologies		V					V					
43	Learning about Huawei network technologies		V				V						
44	Design of integrated information security systems					V						V	
45	Systems of videosupervision and access control		V			V							
46	Technical means of data protection		V			V							
47	Mobile Device Security Technologies	V											
48	Blockchain Technologies						V						V
49	Cybersecurity management		V								V	V	
50	CCNA Cloud Security							V					V
51	CCNAv7: Enterprise Networking, Security and Automation		V				V						