MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN NON-PROFIT JOINT STOCK COMPANY«ALMATY UNIVERSITY OF POWER ENGINEERING AND TELECOMMUNICATIONS named after Gumarbek Daukeev»
Institute of automation and Information Technology

"Agreed"
Development Director
«ICORE-Integration»
_____E.Galimova
«12» 05 2025 y.

"Agreed"
AUEC Rector
_____G. Nygymetov
«13» 05 2025 y.

MODULAR EDUCATIONAL PROGRAM
«7M06104 - INFORMATION SYSTEM SECURITY»
(SCIENTIFIC AND PEDAGOGICAL DIRECTION)
POSTGRADUATE EDUCATION

Area of education:: 7M06 - Information and communication technologies
Areas of training: 7M061 - Information and communication technologies
Direction of study: M094 - Information Technology

Duration of study - 2 years
Qualification level in accordance with the ISCE: 7
Qualification level in accordance with the National Qualifications Framework: 7
Qualification level in accordance with the SQF: 7

Almaty 2025

The educational program "7M06104 - Information Systems Security" is developed based on the Law of the Republic of Kazakhstan "On Education" with amendments and additions as of July 22, 2024, and regulatory documents:

National Qualification Framework (approved by the protocol of the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations dated March 16, 2016);

State mandatory standard of higher education, approved by the Resolution of the Government of the Republic of Kazakhstan dated July 20, 2022, No. 2. Registered in the Ministry of Justice of the Republic of Kazakhstan on July 27, 2022, No. 28916;

Industry Qualification Framework "Information and Communication Technologies," 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 December 5, 2022);

Professional Standard "Ensuring the Security of Information Infrastructure and IT" dated December 5, 2022, No. 2224;

Professional Standard "Educator (Academic Staff) of Higher and/or Postgraduate Education Institutions," Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated November 20, 2023, No. 591;

Professional Standard "Specialists 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 December 5, 2022.

Directions from the Atlas of New Professions:

https://www.enbek.kz/atlas/profession/418DevOps Engineer
https://www.enbek.kz/atlas/profession/84 Cyber Protector
https://www.enbek.kz/atlas/profession/70 Universal AI Cyber Protector

The educational program was developed in the Department of Cybersecurity.

The head of the educational program is PhD, Professor E.G. Satimova.

The development of the educational program involved: PhD, Associate Professor E.E. Begimbaeva, Candidate of Pedagogical Sciences, Associate Professor of the Department of Cybersecurity R.Sh. Berdiabaev, AUES.

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

Head of the Department of Cybersecurity _____ Y.Y.Begimbayeva.

The educational 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 _____ I.A. Fedorenko.

The educational program was reviewed and approved by the NMC of AUPET. Protocol No. 11 on May 23, 2025.

Inclusion of the educational program in the Register.
Status assigned on July 28, 2025.

List of Symbols and Abbreviations

HE	Higher Education
SMES	State Mandatory Educational Standard
EQF	European Qualifications Framework
NCO	National Classifier of Occupations
RK	Republic of Kazakhstan
NQF	National Qualification Framework
NQS	National Qualifications System
GEM	General Educational Module
EP	Educational Program
GED	General Education Disciplines
MC	Mandatory Component
UC	University Component
BD	Basic Disciplines
PD	Profile Disciplines
IET	Individual Educational Trajectory
IQF	Industry Qualification Framework
PS	Professional Standard
PE	Postgraduate Education
ON	Competencies
LO	Learning Outcome
CW	Coursework
CGW	Calculation and Graphic Work
RWS	Research Work of Students
CED	Catalogue of Elective Disciplines

1. Passport of the Educational Program

№	Field Title	Notes
1	Registration Number	7M06100283
2	Code and Classification of the Field of Education	7M06 - Information and Communication Technologies
3	Code and Classification of Training Directions	7M061 - Information and Communication Technologies
4	Group of Educational Programs	M094 - Information Technologies
5	Name of the Educational Program	7M06104 Information Systems Security (Master's Scientific and Pedagogical)
6	Type of Educational Program	Active Educational Program
7	Purpose of the Educational Program	The purpose of the Master's educational program "Information Systems Security" is to train highly qualified specialists capable of consolidating advanced IT technologies and information security. This includes the integration of development, operation, and timely provision of comprehensive protection of computer information, planning and controlling information security audits, evaluating cyber threats, and analyzing information risks. Measures for ensuring information security within the organization will also be developed and implemented.
8	Level according to the MESCO	7
9	Level according to the NRK	7
10	Level according to the ORK	7
11	Distinctive Features of the Educational Program	Dual Diploma Educational Program
	Partner University (DDOP)	NATIONAL RESEARCH NUCLEAR UNIVERSITY "MEPHI"
12	List of Competencies	Learning outcomes and their correlation with competencies formed in the educational program are presented in Appendices 1 and 2.
13	Learning Outcomes	ON-1 (LO-01): Apply theory and methods of humanities, social, and scientific-pedagogical sciences in various professional activities. Self-development and adaptation to new economic, social, political, and cultural situations are emphasized. ON-2 (LO-02): Master knowledge and skills in designing information and automated systems, implement organizational measures for information protection in automated systems, understand project roles in information security, and apply project management methods in this field. ON-3 (LO-03): Ensure information protection during the operation of information systems. Demonstrate the ability to implement project solutions for information protection specific to financial and information systems, apply current regulatory frameworks for information protection, and classify protected information by types of secrecy and levels of confidentiality in banking services.

		ON-4 (LO-04): Master knowledge in developing organizational and administrative documents for information protection in information systems, apply regulations against technical intelligence, and use national, intergovernmental, and international standards in the field of information protection. ON-5 (LO-05): Analyze software, architectural, and schematic solutions of information system components to identify potential vulnerabilities in information protection systems. Demonstrate the ability to analyze hardware implementation methods for cryptographic algorithms and design software and hardware tools for cryptographic protection of information based on schematic description methods using visual design software. ON-6 (LO-06): Master methods for planning expert data analysis and monitoring and responding to information security incidents in critical objects. Conduct and ensure audits of information security for information systems, platforms, and operational procedures. ON-7 (LO-07): Master methods and technologies for developing secure client-server applications and protecting databases and knowledge bases. Apply virtualization tools and distribute cloud services, ensuring application security and data processing hardware. ON-8 (LO-08): Evaluate the security level of computer systems and networks. Master knowledge of modern technologies and software-hardware means for protecting personal data and information in computer networks. Ability to apply methods and tools for high-performance processing of big data and to formulate security policies for computer systems and networks. ON-9 (LO-09): Possess skills in investigating computer crimes, obtaining data from potential information sources, and analyzing malicious software. Master technology for analyzing traces of computer crimes and implementing the identification of software vulnerabilities. ON-10 (LO-10): Master methods for assessing ICT infrastructure from a risk perspective, identifying threats, and determining measures to ensure information security in information systems. Conduct audits and analyze compliance with documents regulating information security processes. ON-11 (LO-11): Possess skills in researching theoretical and methodological approaches to ensuring and managing information system protection and incident management. Design and implement disaster-resistant information systems and mitigate emergency situations. ON-12 (LO-12): Apply methods, content, and means to ensure the required level of training in academic and professional competencies, conduct educational activities based on psychological and pedagogical principles, and carry out scientific research and methodological work.
14	Form of Study	Full-time, Distance
15	Language of Instruction	Russian, Kazakh
16	Credit Volume	120

17	Awarded Academic Degree	Master of Technical Sciences in the Educational Program 7M06104 Information Systems Security
18	Availability of Appendix to the License for Training Direction	License No. KZ80LAA00018161 dated 05.05.2020
19	Availability of Program Accreditation	Yes
	Name of Accreditation Body:	Non-profit Institution "Independent Agency for Accreditation and Rating"
	Срок действия аккредитации	
20	Information on Disciplines	Information on disciplines VK/KV BD, PD is presented in Appendix 1.
21	Area of Professional Activity	Field of science, technology, and technology encompassing a set of problems related to ensuring the security of informatization objects in the presence of threats.
22	Types of Professional Activity	Specialist for work in research universities, research and design institutes, universities, and enterprises capable of performing: -Calculation and design; -Experimental research; -Organizational and management; - Scientific and pedagogical.
23	Modular Study Plan	Presented in Appendix 2.
24	Направления из Атласа новых профессий	https://www.enbek.kz/atlas/profession/418DevOps-инженер https://www.enbek.kz/atlas/profession/84 Киберпротектор https://www.enbek.kz/atlas/profession/70 Киберпротектор универсального ИИ

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	Foreign language (professional)	V											
2	History and philosophy of a science	V											
3	Fundamentals of information security of critical facilities	V										V	
4	Pedagogy of higher education												V
5	Psychology of management		V										V
6	Client Server Application Security							V					
7	Methods and tools for ensuring security in web development and cloud technologies							V					
8	Project management theory and practice		V	V									
9	Hardware implementation of cryptosystems to protect information					V							
10	Secure information systems of automated control systems		V								V		
11	Information security of credit and financial organizations			V									
12	Research on artificial intelligence algorithms						V					V	
13	Disaster tolerance of information system						V					V	
14	Methodology for the protection of personal data information				V				V				
15	Methods and tools for monitoring and responding to information security incidents						V					V	
16	Data mining methods in information security systems						V					V	
17	Preventing the leakage of confidential information								V		V		
18	Design of information and analytical security systems		V							V			
19	Implementation of cryptosystems on digital devices					V							
20	Reverse engineering									V			

21	Technologies for protecting database information processes			V									
22	Technologies for ensuring information security of banking systems			V									
23	Malware Detection Technologies					V				V			
24	Big Data Technologies in Information Security Systems						V					V	
25	Information security incident and risk management				V						V		
26	Information system security continuity management											V	
27	Research practice	V	V								V	V	
28	Teaching practice	V	V										V