Institute of Automation and Information Technologies

Department of Electronics, Telecommunications and Space Technologies

EDUCATIONAL PROGRAM

7M06202 Telecommunications

Code and classification of the field of education: **7M06 Information and Communication Technology**
Code and classification of training directions: **7M062 - Telecommunications**
Group of educational programs: **M096 - Communications and Communication Technologies".**
Level based on NQF: 7
Level based on IQF: 7
Study period: 1.5 y
Amount of credits: 90 credits

Almaty 2025

Educational program _7M06202 Telecommunications was approved at the meeting of K.I. Satbayev KazNRTU Academic Council Minutes #10 dated «06» 03.2025.

was reviewed and recommended for approval at the meeting of K.I. Satbayev KazNRTU Educational and Methodological Council
Minutes #4 dated «22» _12_2024.

Educational program 7M06202 Telecommunications was developed by Academic committee based on direction «M096 - Communications and Communication Technologies »

Full Name	Academic degree / academic title	Position	Place of work	Signature
Chairman of the Academic Committee				
E. Tashtay	Candidate of Technical Sciences, Professor	Head of Department "Electronics, Telecommunications and Space Technologies"	NJSC Kazakh National Research Technical University named after K.I. Satpayev	Mobile phone: +7 701 788 9799
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			University named after K.I. Satpayev	
Employers				
E.E. Bekenov	Master of Technical Sciences	Director	LLP Rtel Group	
Students				
S. Kenesbayeva	–	2nd year Doctoral student	NJSC Kazakh National Research Technical University named after K.I. Satpayev	

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List of abbreviations and designations

EP- Educational Program

RSE- Remote Sensing of the Earth

TCS - Telecommunication Systems

RTS - Radio Technical Systems

EIRM - Equivalent Isotropic Radiated Power

SS - Space stations

FM - frequency modulation
EIRM - equivalent isotropic radiated power

1. Description of educational program

Educational Program (hereinafter referred to as EP) is a set of documents,

developed by the Kazakh National Research Technical University named after K.I. Satpayev and approved by the Ministry of Education and Science of the Republic of Kazakhstan.

For this purpose, the student undergoes a course of theoretical study and carries out a significant relevance and practical significance. The results of the research are formalized in the form of a master's thesis, the defense of which takes place in the prescribed manner

In case of successful completion of the full course of Master's study, the graduate is awarded the academic degree of "engineering and technology" in the field of engineering telecommunication and intelligent infocommunication.

The program is focused on the training of specialists providing innovative development and modernization of advanced telecommunication applications. The content of the OP disciplines was developed taking into account modern trends of telecommunication development and master's educational programs of the leading foreign universities of the world.

Master students study the current state of radio engineering, electronics and telecommunications, digital signal processing in telecommunications, microcontrollers, wireless broadband and sensor networks. A special feature of the program is a large number of experimental studies.

Master's students undergo professional, research and scientific-pedagogical practice in the leading universities of the world, actively participate in research and experimental-research work, can study abroad for a semester under academic mobility programs. Professors from the world's leading universities are invited to give lectures and trainings.

Graduates work in well-known companies of mobile communications, space communications, radio-telecenters in the field of development, implementation and operation of the following systems: telecommunications, radio communications, television, broadcasting, radar and navigation, radio control, mobile communications.

2. Purpose and objectives of educational program

Purpose of EP: The purpose of the e educational program is to train highly qualified and competitive professionals focused on the field of science and technology, which includes theoretical and practical knowledge, skills and abilities for development, design and operation in the field of telecommunications and communication technologies.

Tasks of EP:

- The objectives of the educational program are:
- Studying the cycle of general education disciplines to provide socio-humanitarian education based on the laws of socio-economic development of society, history, state language, foreign language, modern information technologies;

- Studying the cycle of basic disciplines to obtain natural science, general technical and economic knowledge as the foundation of professional education;

Studying the cycle of profiling disciplines for the formation of theoretical knowledge, practical skills and abilities in the use of process control in engineering telecommunication systems as well as in info-communication systems.

- Acquisition of skills and abilities to perform technical calculations and justification of design solutions using modern computer technologies and intellectual programs.

- study of disciplines forming knowledge, skills and abilities of planning and organization of theoretical and laboratory research.

-acquaintance with technical processes, systems of organization, planning and production management during various types of practice.

Types of labor activity of graduates of the educational program are enterprises, complexes, institutions, educational organizations and other objects, which operate technological systems, technical means, providing all transmission, emission and reception of signs, signals, written text, images, sounds, by wire, radio, optical, as well as transformation of information by electronic means or info-communication communication systems: Objects of professional activity of the educational program is a field of science and engineering, which includes a set of technologies, means, ways and methods of human activity, aimed at creating conditions for the exchange of information at a distance, transformation of information by electronic and radiotechnical means.

3. Requirements for evaluating the educational program learning outcomes

OP 7M06202 - "Telecommunications" ensures the achievement by all students of learning outcomes required for professional activity. At the end of the program students must:

- Studying the cycle of general education disciplines to provide socio-humanitarian education based on the laws of socio-economic development of society, history, state language, Russian and foreign languages, modern information technologies;

- Studying the cycle of basic disciplines to obtain natural science, general technical and economic knowledge as the foundation of professional education;

Studying the cycle of profiling disciplines for the formation of theoretical knowledge, practical skills and abilities in the use of process control in engineering telecommunication systems as well as in info-communication systems.

Acquisition of skills and abilities to perform technical calculations and justification of design solutions using modern computer technologies and intellectual programs. study of disciplines forming knowledge, skills and abilities of planning and organization of theoretical and laboratory research. familiarization with technical processes, systems of organization, planning and management of production during various types of practice. Types of labor activity of graduates of the educational program are enterprises, complexes, institutions, educational organizations and other objects, which operate technological systems, technical

means that provide any transmission, emission and reception of signs, signals, written text, images, sounds, by wire, radio, optical, as well as the transformation of information by electronic means or info-communication communication systems:

Objects of professional activity of the educational program is a field of science and engineering, which includes a set of technologies, means, ways and methods of human activity, aimed at creating conditions for the exchange of information at a distance, transformation of information by electronic and radio technical means.

4. Passport of educational program

4.1. General information

№	Field name	Comments
1	Code and classification of the field of education	7M06 "Information and Communication Technologies"
2	Code and classification of training directions	7M06202 Telecommunications
3	Educational program group	M096 Communications and communication technologies
4	Educational program name	Telecommunications
5	Short description of educational program	In case of successful completion of the full Master's program, the graduate is awarded the academic degree of "engineering and technology" in the field of telecommunication engineering and intelligent infocommunication. The program is focused on training specialists providing innovative development and modernization of advanced telecommunication applications. The content of the OP disciplines was developed taking into account modern trends of telecommunication development and master's educational programs of the leading foreign universities of the world. Master students study the current state of radio engineering, electronics and telecommunications, digital signal processing in telecommunications, microcontrollers, wireless broadband and sensor networks. The peculiarities of the program are a large number of experimental studies
6	Purpose of EP	The purpose of the e educational program is to train highly qualified and competitive professionals focused on the field of science and technology, which includes theoretical and practical knowledge, skills and abilities for development, design and operation in the field of telecommunications and communication technologies
7	Type of EP	Educational program
8	The level based on NQF	7
9	The level based on IQF	7
10	Distinctive features of EP	no
11	List of competencies of educational program	The period of study in the Master's program is determined by the volume of academic credits mastered. When the established volume of academic credits is mastered and the expected learning outcomes for the Master's degree are achieved, the Master's degree program is considered to be fully mastered. In the specialized Master's program there are 90 academic credits with a study period of 1.5 years. Planning of the content of education, the way of organization and conduct of the educational process is carried out by the HEI and scientific organization independently on the basis of credit technology of education. Master's degree in the profile direction implements

		educational programs of postgraduate education for the training of managerial personnel with advanced professional training. The content of the educational program of Master's degree consists of: 1) theoretical training, including the study of cycles of basic and profiling disciplines; 2) practical training of Master students: various types of practical training, scientific or professional internships; 3) experimental and research work, including the implementation of a master's project - for specialized master's programs; 4) final attestation. The content of the educational program (EP) "Engineering Telecommunication and Intelligent Info-communication Systems" is implemented in accordance with the credit technology of education and is carried out in the state and Russian languages.
12	Learning outcomes of educational program	PO1 Freely use the state, Russian and selected foreign language in professional activity at a professional level, to express knowledge, and practical analysis of various kinds of reasoning and to conduct scientific research. PO2 Analyze the basic methods of modern control theory: conduct the installation, setup, and operation of electronics systems, radio engineering, and telecommunications components. PO3 Apply basic skills of applied ethics and ethics of business communication in the field of telecommunications in professional activities and everyday life PO4 Apply normative and technological documentation of communication systems, electronics standards requirements to telecommunication, electronic and radio engineering systems and devices. PO5 Demonstrate the ability to configure telecommunications, electronic and radio engineering systems and devices of varying levels of complexity. PO6 Demonstrate the ability of independence to promptly solve modern scientific, technical, technological and production problems in the field of engineering telecommunications and intelligent systems PO7 Design telecommunication systems and provide technical support to users PO8 Demonstrate skills in modeling, design and experimental research using modern telecommunication technologies in the field of radio electronics and satellite technologies PO9 Demonstrate skills in controlling communication, electronic and radio engineering systems and devices R10 Apply skills in organizing and managing intelligent telecommunication systems.
13	Education form	Full-time

14	Period of training	1,5
15	Amount of credits	90 credits
16	Languages of instruction	Kazakh, Russian, English
17	Academic degree awarded	Master of Engineering and Technology
18	Developer(s) and authors	Tashtay E. Khabay A

4.2. Relationship between the achievability of the formed learning outcomes based on educational program and academic disciplines

№	Name of the discipline	Brief description of the discipline	Number of credits
		Cycle of general education disciplines Compulsory component	
1	Foreign language (professional)	The purpose of the discipline is to acquire and improve competencies in accordance with trade standards of foreign education, capable of competing in the labor market, because through a foreign language, the future master gains access to academic knowledge, new technologies and modern information, allowing the use of a foreign language as a means of communication in the intercultural, professional and scientific activities of the future master.	**2**
2	Psychology of management	Objective: To acquire skills in making strategic and managerial decisions, taking into account the psychological characteristics of the individual and the team. Content: the modern role and content of psychological aspects in management activities, methods for improving psychological literacy, the composition and structure of management activities, both at the local and foreign levels, the psychological feature of modern managers.	**2**
3	Management	Purpose: To form a scientific understanding of management as a type of professional activity. Contents: Mastering the general theoretical principles of managing socio-economic systems; acquiring skills and abilities in practical problem-solving of managerial issues; studying global management practices and the specificities of Kazakhstani management; training in solving practical issues related to managing various aspects of organizational activities.	**2**
		Cycle of basic disciplines Elective component	
4	Modern sensor communication networks	The course "Modern sensor communication networks" covers the basic structure and the main classes of application of image sensors. It discusses high-quality optics that meet the requirements of improved image sensors, the main functions and operating parameters of image sensors, and also discusses in detail the CCD and CMOS image sensors. In addition, the course explains how color theory affects the use of image sensors, presents basic image processing and camera control algorithms and examples of advanced image processing algorithms, explores the architecture and required performance of signal processing mechanisms, and explains how to evaluate image quality.	**5**
5	Intelligent micro and nanosensory devices	The main objective of this course is to familiarize graduate students with micro and nanoscale sensor. After completing	**5**

		this course, graduate students will understand the applications of micro- and nanoscale sensors and devices. They will know how to design, analyze, and characterize micro- or nanosystems. They will also gain an understanding of manufacturing micro-nanodevices.Micro- and nanosensors. Principles of operation. Design methods, fabrication and standardization. Integration of nanosensors into intelligent systems. Prospects of nanosensors development in infrastructure projects. Operating conditions of micro-nanosensors and their modernization in intelligent systems	
6	Digital processing of telecommunications signals	The basic processes of preliminary processing of digital information; interference and its effect on the digital signal, methods of increasing noise immunity of digital communication, classification of noise immunity parameters, models of channels of noise-immune information transmission, providing noise-immune modulation, classical methods of construction and realization of encoders and decoders of noise-immune codes also modern methods and device of noise-immune coding.	**4**
7	Internet of things and self-organizing networks	The discipline studies self-organizing networks, familiarization with the concept of the Internet of things, widespread sensory networks, wireless self-organizing networks and self-organizing networks for the car, as well as an overview of the main protocols for managing transmission, routing and access to the transport level. A network with a variable topology. Dynamic. Decentralized. Mobile. Nodes that make up the network. These can be personal computers, laptops, smartphones, tablets, smart sensors, and other devices.	**4**
8	Computer-aided design system in radio electronic devices	Stages of design of radio-electronic devices (RED). Selection and justification of the element base and materials for RED designs. Design principles of RED. Tasks of layout. Fundamentals of design automation. Fundamentals of ECAD architecture. Mathematical models (computer-aided design system) CADS. Tasks of parametric automation. Fundamentals of CALS-technologies.	**5**
9	Multichannel radio engineering information transmission systems	The task of studying the discipline is to obtain the necessary knowledge on the physical and theoretical basis of functioning of multichannel radio-technical systems of information transmission, signal processing and principles of construction of advanced information processing systems. Analysis of methods of spatial signal coding allows to increase the bandwidth of the channel, in which data transmission and data reception are carried out by systems of several antennas. The principle of combining and separation of group signal channels, formation of linear sums of channel signals, methods of linear separation by frequency, time and by form of signals, their use for construction of multichannel systems, transmission of group signal of many subscribers by one transmitter.	**5**
10	Satellite communication and	Study of principles of construction of satellite communication	**5**

	navigation systems	and data transmission systems and their components; study of methods and types of multistation access, types of modulation and noise-resistant coding; study of peculiarities and prospects of VSAT satellite networks development; study of peculiarities of mobile satellite communication systems and broadcasting systems; study of parameters and characteristics of the most famous domestic and foreign satellite communication systems on geostationary and non-geostationary orbits; study of perspective technologies of satellite communication systems on geostationary and non-geostationary orbits; study of satellite communication systems on geostationary and non-geostationary orbits.	
11	Satellite and radio relay systems	The aim of the discipline - Modern and perspective directions of development of radio relay and satellite equipment, characteristics of modern modulation methods of digital signal processing used in radio relay and satellite equipment, operating conditions of radio relay and satellite communication networks, applied methods of calculation and design of radio relay and satellite systems, electromagnetic compatibility of various radio communication and broadcasting systems.	5
12	Fundamentals of optical and radar systems for remote sensing of the Earth	When studying this discipline, undergraduates master complex approaches to processing Earth remote sensing data, where they analyze the obtained measurement results using various means and technologies, including sensors that take pictures in optical and radar ranges, get acquainted with the work. Mastering methods and algorithms for capturing optical and radar satellite images that allow data processing in automatic mode.	5
13	Internet of things and self-organizing networks	The discipline studies self-organizing networks, familiarization with the concept of the Internet of things, widespread sensory networks, wireless self-organizing networks and self-organizing networks for the car, as well as an overview of the main protocols for managing transmission, routing and access to the transport level. A network with a variable topology. Dynamic. Decentralized. Mobile. Nodes that make up the network. These can be personal computers, laptops, smartphones, tablets, smart sensors, and other devices.	5
14	Methods of modeling and optimization in infocommunication systems and networks	The purpose of studying the discipline - the main qualitative indicators of telecommunication networks and systems, the theory of mass service and the theory of teletraffic, the development of communication media that provide communication between end-user devices, mobile and fixed phones, personal computers, smartphones. The interaction of these devices makes it possible to realize the processing of information flows of different purposes. Analog models are considered in depth among physical models. Mathematical models, which are created to compose and study models of objects or processes.	5
15	Broadband wireless networks	The purpose of the discipline is to study the basics of construction and application of broadband wireless networks	5

		(BWN) and their elements based on pseudo-random sequences (PRS) in modern telecommunication systems. Applications of BWN in info-communication systems of different architecture. The methods and means of designing BWN. Modern wireless network technologies, principles of sensor networks, use of modern network routing and data transmission protocols	
16	Programming the microcontroller	The purpose of studying the discipline is the technology of the purpose of studying the discipline - technology of designing microelectronic systems based on microcontrollers and LIC (large integrated circuits). Means of programming and debugging of microprocessor controllers. Practical diagrams and program schematics for programming microcontrollers and programmable logic integrated circuit and microcontrollers. When designing microcontrollers, a compromise has to be made between size and cost on the one hand and flexibility and performance on the other. For different applications, the optimal balance between these and other parameters can vary widely.	**5**
17	Components of the optical communication system	Understanding of the basic principles and technologies of optical communications, which are used to transmit information through optical fibers, including working with optical signals. Examination of different types of optical fibers and cables, their characteristics, structure and properties, as well as fabrication techniques, optical technology-based communication networks and their applications in the modern world, including telecommunications, the Internet, medicine and scientific research. Examination of the various light sources used in optical communications, such as lasers and diodes, and their characteristics and study of devices that modulate and demodulate optical signals for data transmission. Understanding the principles of optical receivers and amplifiers used to amplify and detect optical signals. Examination of data transmission systems, including multiplexing and demultiplexing techniques and optical signal processing	**5**
18	Embedded microcontrollers and microprocessors of the system	The basic information about modern microprocessors and microcontrollers is presented, architectures and classification of modern microprocessors and microcontrollers, command systems and their comparative characteristics are given. Sufficient attention is paid to large integrated circuits that complement microprocessors (timers, direct memory access controllers, serial transceivers, etc.) Identified typical microprocessor systems. Methods and ways of designing microcontroller and microprocessor are given. The principles of functioning of microprocessor controls are described.	**4**
19	Error-coding transmission systems of digital information	The basic processes of preliminary processing of digital information; interference and its effect on the digital signal, methods of increasing noise immunity of digital communication, classification of noise immunity parameters, models of channels of noise-immune information	**4**

		transmission, providing noise-immune modulation, classical methods of construction and realization of encoders and decoders of noise-immune codes also modern methods and device of noise-immune coding.	
20	Wireless sensory networks	Understand the principles of operation and technologies used in wireless sensor networks, including different types of sensor nodes, communication protocols and architectures. Address security and data protection issues in wireless sensor networks, including threats and prevention techniques. Supporting the stimulation of research and innovation in wireless sensor networks so that graduate students can develop new technologies and improve existing systems. The study of this discipline helps master students to master the current technologies and practices in the field of wireless sensor networks, which can be useful in the design and implementation of sensor systems in various fields, as well as in research and innovation in this area.	5
21	Multimedia technology in telecommunication systems	This discipline considers modern technologies of processing and transmission of video, audio and other multimedia information, digital processing and compression of video and audio information, investigates statistical and perceptual redundancy of video and audio information, as well as methods of its elimination, studies the principles and standards of video and audio compression, methods of their calculation, restoration of compressed video and audio information, and evaluation of its quality.	5
22	Telemetry information and communication systems	The purpose of studying the discipline - the construction of transmission systems with frequency division of channels (FDC). Methods of formation and transmission of channel signals in transmission systems with frequency division of channels. Principles of construction of transmission systems with time division of channels (TDC). Hierarchical construction of systems with ICM. Principles of construction of terrestrial and satellite television and sound broadcasting systems.	5
23	Photogrammetry methods	The course covers the stages of photogrammetry development, basic types and methods of phototopographic surveys, basics of aerial photography, geometric basics of photogrammetry, single image theory, aerial image transformation, methods of planar phototriangulation, photoplans and photographic schemes, methods of image decoding, methods of stereomodel observation and measurement, theory of a pair of aerial images, methods of photogrammetric model construction, methods of image processing on a stereometer, methods of spatial phototriangulation, methods of digital photogrammetry, types of photogrammetric products and their characterization.	5

5. Curriculum of educational program

6. Additional educational programs (Minor)

Name of additional educational programs (Minor) with disciplines	Total number of credits	Recommended semesters of study	Documents on the results of mastering the additional educational programs (Minor)

NON-PROFIT JOINT STOCK COMPANY
"KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY NAMED AFTER K.I. SATBAYEV"

SATBAYEV UNIVERSITY

«APPROVED»
Decision of the Academic Council
NPJSC«KazNRTU
named after K.Satbayev»
dated 20.02.2025 Minutes № 9

WORKING CURRICULUM

Academic year	**2025-2026 (Spring, Autumn)**
Group of educational programs	**M096 - "Information and communication technologies"**
Educational program	**7M06202 - "Telecommunication"**
The awarded academic degree	**Master of engineering and technology**
Form and duration of study	**full time (professional track) - 1,5 years**

Discipline code	Name of disciplines	Block	Cycle	Total ECTS credits	Total hours	lek/lab/pr Contact hours	in hours SIS (including TSIS)	Form of control	Allocation of face-to-face training based on courses and semesters			Prerequisites
									1 course		2 course	
									1 sem	2 sem	3 sem	
CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)												
CYCLE OF BASIC DISCIPLINES (BD)												
M-1.Module of basic training (university component)												
LNG212	Foreign language (professional)		BD, UC	2	60	0/0/30	30	E		2		
MNG726	Management		BD, UC	2	60	15/0/15	30	E		2		
HUM211	Psychology of management		BD, UC	2	60	15/0/15	30	E		2		
M-2.Module of telecommunication networks and communication systems												
ELC246	Digital processing of telecommunications signals	3	BD, CCH	5	150	15/15/15	105	E		5		
ELC249	Error-coding transmission systems of digital information	3	BD, CCH	5	150	30/0/15	105	E		5		ELC110
ELC299	Intelligent micro and nanosensory devices	4	BD, CCH	4	120	30/0/15	75	E		4		
ELC298	Modern sensor communication networks	4	BD, CCH	4	120	30/0/15	75	E		4		
CYCLE OF PROFILE DISCIPLINES (PD)												
M-2.Module of telecommunication networks and communication systems												
ELC253	Internet of things and self-organizing networks		PD, UC	5	150	30/0/15	105	E	5			
ELC254	Wireless sensory networks	1	PD, CCH	5	150	30/0/15	105	E	5			
ELC221	Multichannel radio engineering information transmission systems	1	PD, CCH	5	150	30/0/15	105	E	5			ELC142
ELC204	Multimedia technology in telecommunication systems	2	PD, CCH	5	150	30/0/15	105	E	5			ELC144, ELC151
ELC213	Telemetry information and communication systems	2	PD, CCH	5	150	30/0/15	105	E	5			
ELC251	Methods of modeling and optimization in infocommunication systems and networks	3	PD, CCH	5	150	30/0/15	105	E	5			ELC149, ELC110
ELC278	Photogrammetry methods	3	PD, CCH	5	150	30/0/15	105	E	5			
ELC253	Internet of things and self-organizing networks	4	PD, CCH	5	150	30/0/15	105	E	5			
ELC216	Broadband wireless networks	4	PD, CCH	5	150	30/0/15	105	E	5			
ELC252	Computer-aided design system in radio electronic devices		PD, UC	5	150	30/0/15	105	E		5		
ELC212	Satellite communication and navigation systems	1	PD, CCH	5	150	30/0/15	105	E		5		
ELC211	Satellite and radio relay systems	1	PD, CCH	5	150	30/0/15	105	E		5		ELC147
ELC256	Programming the microcontroller	2	PD, CCH	5	150	30/15/0	105	E		5		ELC171
ELC257	Embedded microcontrollers and microprocessors of the system	2	PD, CCH	5	150	30/0/15	105	E		5		
ELC297	Components of the optical communication system	1	PD, CCH	4	120	30/0/15	75	E			4	
ELC296	Fundamentals of optical and radar systems for remote sensing of the Earth	1	PD, CCH	4	120	30/0/15	75	E			4	

M-3. Practice-oriented module												
AAP253	Internship		PD, UC	5				R	5			
M-4. Experimental and research module												
AAP249	Experimental research work of a master student, including an internship and the implementation of a master's project		ERWMS	18				R			18	
M-5.Module of final attestation												
ECA213	Design and defense of the master's project		FA	8							8	
Total based on UNIVERSITY:									30	30	30	
									60		**30**	

Number of credits for the entire period of study

Cycle code	Cycles of disciplines	Credits			
		Required component (RC)	University component (UC)	Component of choice (CCH)	Total
GED	Cycle of general education disciplines	0	0	0	0
BD	Cycle of basic disciplines	0	6	9	15
PD	Cycle of profile disciplines	0	15	34	49
Total for theoretical training:		**0**	**21**	**43**	**64**
RWMS	Research Work of Master's Student				0
ERWMS	Experimental Research Work of Master's Student				18
FA	Final attestation				8
TOTAL:					**90**

Decision of the Educational and Methodological Council of KazNRTU named after K.Satpayev. Minutes № 4 dated 03.02.2025

Decision of the Academic Council of the Institute. Minutes № 4 dated 22.01.2025

Signed:

Governing Board member - Vice-Rector for Academic Affairs	Uskenbayeva R. K.
Approved:	
Vice Provost on academic development	Kalpeyeva Z. Б.
Head of Department - Department of Educational Program Management and Academic-Methodological Work	Zhumagaliyeva A. S.
acting Director of Institute - Institute of Automation and Information Technologies	Chinibayev Y. Г.
Department Chair - Electronics, telecommunications and space technologies	Tashtay Y. .
Representative of the Academic Committee from Employers ____Acknowledged____	Bekenov E. E.