

EDUCATIONAL PROGRAM

7M07107-Transport, transport equipment and technologies

Level: Master's Degree

Karaganda 2024

EDUCATIONAL PROGRAM «7M07107-Transport, transport equipment and technologies»

РЦУП-З



«AGREED» Chief The Regional Transportation Management Center of the branch of JSC NC "KTZ" Akmola branch of the backbone network Zh. Zhumashev

2024

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The educational program in the direction of training «7M07107-Transport, transport equipment and technologies» is developed on the basis of:

- Law of the Republic of Kazakhstan dated July 27, 2007 No. 319-III "On Education";
- Law of the Republic of Kazakhstan dated July 4, 2023 No. 14-VIII SAM. "On professional qualifications"
- State Mandatory Standard of Higher Education No. 2 dated July 20, 2022;
- The National Qualifications Framework of March 16, 2016 by the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations;
- Order of the Ministry of Education and Science of the Republic of Kazakhstan "On approval of the Rules for the organization of the educational process in credit technology" dated April 20 2011 No. 152;
- Classifier of areas of training with higher and postgraduate education dated October 13, 2018 No.569;
- Professional standard "Teacher". Order of the Acting Minister of Education of the Republic of Kazakhstan dated December 15, 2022 No. 500.
- Rules for the development and (or) updating of industry qualifications frameworks. Order of the Minister of Labor and Social Protection of the Republic of Kazakhstan dated September 14, 2023 No. 384.
- Qualification directory of positions of managers, specialists and other employees. Order of the Minister of Labor and Social Protection of the Republic of Kazakhstan dated December 30, 2020 No. 553.
- Professional standard "Control over the technical condition of motor transport" (Appendix No. 3 to the order of the Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" dated September 6, 2018 No. 239)

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1. Passport of the educational program

1.1 General information about the educational program

1. Code and name of the educational program: 7M07107- Transport, transport equipment and technologies

2. Code and classification of the field of education, training areas: 7M07 Engineering, manufacturing and construction industries 7M071 – Engineering and Engineering

3. Group of educational programs: M104- Transport, transport equipment and technologies

4. The amount of credits -120

5. Form of study: full-time

6. Language of instruction: Kazakh, Russian, English

7. Degree awarded: Master of Technical Sciences

8. Type of EP: current

9. ISCED level (International Standard Classification of Education) – Level 7

10. Level of NQF (National Qualifications Framework) - Level 7

11. ORC level (Industry Qualifications Framework) – Level 7

12. Distinctive features of EP: no

13. Number of the appendix to the license for the direction of training: KZ83LAA00018495 dated 07/28/2020, appendix 016

14. The name of the accreditation body and the validity period of the EP accreditation:

15. Objectives of the EP: Preparation of masters with in-depth knowledge in new directions of the transport industry, who possess methods of conducting fundamental and applied scientific research in the field of transport operation

16. Qualification characteristics of the graduate

a) List of graduate positions

The graduate of the Master's degree is awarded the degree: Master of Technical Sciences in the educational program "7M07107 - Transport, transport equipment and technologies". Qualifications and positions: researcher; designer, mechanic, site manager, repair engineer, head of the management bodies of industrial enterprises, researcher and teacher in organizations of higher and professional education.

b) The scope and objects of professional activity of the graduate

Scientific-research, scientific-production, design organizations; educational institutions of higher and vocational education

c) Types of professional activity of the graduate:

- educational (educational, pedagogical);

- scientific research;

- organizational and managerial;

- production and management;

- project.

d) Functions of the graduate's professional activity:

- pedagogical;

- research;

- social and communicative.

17. Formulation of learning outcomes based on the competencies of the EP "7M07107- Transport, transport equipment and technologies"

Types of compe- tencies	Lear ning result	Learning outcomes (according to Bloom's taxonomy)
1. Behavioral	RO1	Analyzes professional technical and technological information in a foreign language, methodological problems, the re-
qualities: (Soft		suits of a scientific experiment in solving research problems and organizing night education.
SKIIIS)	RO 2	Uses socio-humanitarian, natural science, pedagogical and psychological knowledge, modern methods and methods of
		planning, management, taking into account psychological aspects that contribute to the implementation of the main di- rections of modernization of public consciousness.
	RO 3	Analyzes the state of transport equipment and technological equipment, owns methods for assessing their reliability. Uses methods of technical and economic analysis and conditions for making engineering and management decisions.
	RO 4	Applies procedures for patenting inventions, technologies for intellectual property protection and commercialization of scientific research results.
2. Digital competencies: (Digital skills):	RO 5	Uses software, hardware components of intelligent transport systems and methods of analysis of technical, technologi- cal, material science components in the organization of transportation and operation of transport.
(2 - 9	RO 6	Conducts research and technical tests using modern digital technologies and research methods. Applies automated con- trol systems in the modeling of transport processes and logistics systems.
3. Professional competencies:	RO 7	Solves the problems of designing transport infrastructure, structures; interaction of modes of transport with the help of intercultural aspects of business communication in professional activities.
	RO 8	Knows the methods of modeling and calculating the reliability of vehicle parts; operation, conditions of diagnosis and maintenance of transport equipment.
	RO 9	Applies interstate, international and national standards, documents on standardization, metrology, certification, technical regulations and conditions in professional activity.
	RO 10	Applies methods of modeling transport and logistics systems, transport processes; methods of testing, quality control of structural, composite and operational materials.

18. Determination of discipline modules in accordance with the results of the training of the EP "7M07107- Transport, transport equipment and technologies"

Learning result code	Module Name	Discipline Name	Volume (ECTS)
1	2	4	
RO 1, RO 2	Philosophical and histori-	History and philosophy of science	4
	cal aspects of teaching in	Higher school pedagogy	4
	higher education	Management Psychology	4
		Pedagogical practice	
RO1,	Professional languages	Foreign language (non-professional)	4
RO1, RO4, RO6,	Science and innovation	Foreign terminology in the transport system	4
RO/		Intercultural aspects of business communication in the international transport sector	6
		Commercialization of the results of scientific and scientific-technical activities	0
		Organization of the transportation process	-
		Methods of research activity	5
		Experiment planning	
RO3, RO5, RO8	Technical and technologi-	Methods of evaluation and testing of transport equipment	4
	cal components of the	Operation and maintenance of transport equipment	6
	transport process		0
RO5, RO6, RO8,	Modeling in the transport	Digitalization of the transport industry	4
RO9, RO10	system	Intelligent transport systems	
		Patenting	7
		Technical regulation and ensuring the uniformity of measurement	
		Promising structural and operational materials	5
		Methods and means of diagnosing transport equipment	
		Relationship of modes of transport	6
		Transport and technological support of industry	0
		Design and organization of transport and logistics systems	7
		Modeling of transport processes	
RO5, RO6, RO8, RO9, RO10	Research practice	Research practice	14
RO5, RO6, RO8,	Research work	Research work of a master's student, including internship and completion of a master's	24
KU9, KU10		thesis (NIRM)	
RO1 RO5, RO6, RO8, RO9, RO10	Final certification	Preparation and defense of a master's thesis	8

19.Matrix of achievability of learning outcomes

NN	Discipline Name	Brief description of the discipline (30-50 words)	Num	Num Generated learning outcomes (codes))						
п/п	F		ber	r								-	
			01 credi	01	02	03	04	05	90	07	08	60	010
			ts	R	R	R	Ä	R	R	R	R	R	R
D1	History and philosophy of science	The purpose of the discipline is to study the philosophical phenomena of	4	+									
		scientific knowledge in its tendency to development and changing socio-											
		cultural profile. As a result of studying the discipline, knowledge is formed											
		about the peculiarities of scientific knowledge, the role of science in the											
		culture of modern civilization, and the skills of philosophical thinking											
		among students.											
D2	Pedagogy of higher education	The course highlights the main provisions on the content of higher	4	+									
	redugogy of inglief education	education, modern didactic concepts in higher education; features of the											
		design and organization of the pedagogical process at the university,											
		modern educational technologies; fundamentals of pedagogical skills and											
		pedagogical techniques, management in education, management of the											
		process of formation and development of students' personality.											
D3		The course is aimed at forming undergraduates' knowledge about the	4		+	+							
	Psychology of management	psychological content and structure of management activities,											
		psychological characteristics of the personality of the head and											
		psychological patterns of joint activity of people to achieve organizational											
		goals; the formation of practical skills of psychological support of											
		management activities in various areas of the national economy.											
D4		The academic discipline implements the basic part of the general scientific		+									
		curriculum of the Master's degree program and is an organizational part of											
	Foreign language (professional)	the process of training highly qualified specialists who actively speak a											
	r oroign language (proressional)	foreign language as a means of intercultural and communication in the field											
		of professional interests. To study the discipline, students must have the											
		language knowledge provided by the bachelor's degree program.											
D5		The purpose of the discipline is to form the necessary communicative skills	4							+			
	Intercultural aspects of business	and abilities necessary for effective intercultural communication in the											
	communication in the international	field of transport, to acquaint masters with the peculiarities of the language											
	transport sector	of business correspondence focused on specialized contexts characteristic											
		of the transport sphere of business activity.	-										
	Foreign terminology in the	The course examines such issues as the specifics of oral professional		+									
	transport system	speech; the concept of "special language"; the conditions for the function-											
		ing of speech styles; genre differentiation of speech styles; professional											
		terminology; the lexical component of professional speech; the main stages											
		of work on the unification and standardization of professional terms; lexi-											
		cal and grammatical minimum. The aim of the course is to develop the											
		skills necessary for undergraduates to read and translate (with a dictionary)											
		ioreign texts of a professional orientation; to use the rules of spelling and											
Dé	Organization of the transportation	The course is designed to study the mechanics of the designment of	6										
00	brocess	transport services and the organization of sofe transportation by sub-	0						+				
	process	indicators and characteristics of the transportation process, principles of											
		indicators and characteristics of the transportation process, principles of											

		formation and types of tariffs, regulatory support of the transport process. Formation of master students' skills in solving optimization problems and ensuring transportation safety.							
	Commercialization results of scientific and technical activities	A course regulating the sphere of commercialization of scientific and sci- entific-technical activities, contributing to the unification of institutes of education, science, production and innovative development.				+	+		
D7	Experiment planning	The course examines the main provisions of the theory of experiment plan- ning; the conditions for selecting experimental factors and the requirements imposed on them; conducting an experiment and processing its results. The purpose of studying the discipline is to develop undergraduates' skills in organizing and planning scientific work, gaining experience in conducting scientific experiments and processing the results of scientific and practical research.	5		-	+			
	Methods of research activity	The course examines the main stages of the development of science and the main provisions of the methodology of scientific research; general scientific and special methods of modern scientific research; basic principles of organization and planning of scientific work and general requirements for the structure, content, language and design of student scientific papers. The purpose of studying the discipline is to form undergraduates' primary professional skills in organizing, conducting and presenting the results of research work.			-	+			
D8	Methods of evaluation and testing of transport equipment	The course is designed to study the basics of dynamic calculations, condi- tions for ensuring stability, patency, smoothness, comfort of vehicles; crite- ria for comparing and evaluating transport equipment; construction of transport equipment; methods of engineering calculations of dynamic sys- tems of transport equipment. The purpose of the discipline is to develop undergraduates' skills in testing methods and diagnostic tools for transport equipment.	4	+		+			
D9	Operation and maintenance of transport equipment	The course examines the basics of organizing an engineering and technical service for vehicle maintenance; the basics of maintaining regulatory and technical documentation; requirements for service products; the quality of service and its products; the capacity of the transport equipment market; personnel management issues. The purpose of the discipline is to form undergraduates' skills in the organization and management of vehicle maintenance services.	6	+				+	
D10	Digitalization of the transport industry	The discipline studies the conditions of integration of digital technologies and transport, transportation processes; the current state of automation equipment, automated object management systems. The course is aimed at developing students' skills in the means and methods of automated, auto- matic control of transport and the transportation process.	4		+				
	Intelligent transport systems	The discipline considers such basic provisions as: principles of designing components of intelligent transport systems, automatic control systems used in transport technology; practical methods of calculating automatic control and control systems. The aim of the course is to teach undergradu- ates the theoretical and practical basics of using software and hardware components of intelligent transport systems in the field of planning, organ- ization and management of transport.			+				
D11	Patenting	The course studies the basic principles and conditions of the organization of legal protection of the results of creative activity. The purpose of the course is to form the concepts of the patent system, intellectual property;	7						+

D12 Promising structural and comparison of the manufacture structure of the construction of the consthecon construction of the consthecon construction of the construc			the rights and obligations of patent holders, authors and owners of intellec-						
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20. Coordination of planned learning outcomes with teaching methods

Learning outcomes	Planned learning outcomes for the module	Learning methods	Assessment methods		
RO1	Analyzes professional technical and technological information in a foreign language, methodolog- ical problems, the results of a scientific experiment in solving research problems and organizing higher education.	Interactive lecture	test		
RO2	Uses socio-humanitarian, natural science, pedagogical and psychological knowledge, modern methods and methods of planning, management, taking into account psychological aspects that contribute to the implementation of the main directions of modernization of public consciousness.	Interactive lecture	test		
RO3	Analyzes the state of transport equipment and technological equipment, owns methods for as- sessing their reliability. Uses methods of technical and economic analysis and conditions for mak- ing engineering and management decisions.	Case methods	Project preparation		
RO4	Applies procedures for patenting inventions, technologies for intellectual property protection and commercialization of scientific research results.	Interactive lecture, Case methods	Test, presentations		
RO5	Uses software, hardware components of intelligent transport systems and methods of analysis of technical, technological, material science components in the organization of transportation and operation of transport.	Discussions	Project preparation		
RO6	Conducts research and technical tests using modern digital technologies and research methods. Applies automated control systems in the modeling of transport processes and logistics systems.	Case methods	Test, presentations		
RO7	Solves the problems of designing transport infrastructure, structures; interaction of modes of transport with the help of intercultural aspects of business communication in professional activities.	Case methods	Test, presentations		
RO8	Knows the methods of modeling and calculating the reliability of vehicle parts; operation, condi- tions of diagnosis and maintenance of transport equipment.	Interactive lecture, Case methods	Test, project preparation		
RO9	Applies interstate, international and national standards, documents on standardization, metrology, certification, technical regulations and conditions in professional activity.	Interactive lecture	Test, project preparation		
RO10	Applies methods of modeling transport and logistics systems, transport processes; methods of test- ing, quality control of structural, composite and operational materials.	Case methods	Test, presentations		

21. Graduate model

Attributes of the graduate:

- has deep scientific knowledge in the field of solving transport and technological problems;
- emotional intelligence;
- adaptability to global challenges;
- leadership;
- organizational skills;
- understanding the importance of the principles and culture of academic integrity.

Types of	Description of competencies
competencies 1. Behavioral skills and personal qualities: (Soft skills)	Understands scientific and philosophical, socio-economic, organizational and managerial aspects of the organization of activi- ties in transport. He is able to scientifically organize professional activities and effectively focus on results. Ready for innova- tion, self-education and professional activity in a foreign language environment
 Digital competencies: (Digital skills): Professional competencies: 	Understands the conditions of integration of digital technologies and the transport process; the essence and structure of intelli- gent transport systems. Demonstrates the ability to solve the tasks of organizing monitoring of transport and transport and lo- gistics systems Has a scientific approach to solving design and technological and transport-technological tasks. A scientific approach and log- ical thinking have been formed in solving the problems of operation, diagnostic maintenance, repair and selection of vehicles, operational, composite materials; skills in using methods and means of determining the reliability, safety and durability of transport

Developers:
Members of the working group:
Professor, Ph.D. G.O.Tazhigulova
Director of Bus Park No. 2 LLP, Karaganda" G.M. Zhaksybaev
Senior lecturer, Candidate of Technical Sciences G.E.Abdurayeva
Senior lecturer, M.Sc. Ray I.M.Kamzabekov
1 st year Master's student 3. Eye Z.S. Blyalova
P

Member of the Board - Vice-Rector for Academic Affairs

Acting Director of the Department for Academic Work

Dean of the Faculty of Physics and Technology

M.M. Umurkulova

T.M. Khasenova

A.K.Zeinidenov

Codes	Planned learning outcomes for the module
ofLO	
	Knows: methodological problems of scientific experiment and conditions of the organization of the educational process in higher educa-
LUI	tion
-	Can: analyze, process, generalize and reproduce technical and technological information in a foreign language and solve research prob-
	lems.
-	Owns: critical thinking skills and the ability to apply it to the field of professional activity
LO 2	Knows: Knows the basic concepts, theories and approaches of planning, management, taking into account psychological aspects;
202	Can: Is able to use socio-humanitarian, natural science, pedagogical and psychological knowledge in planning and management
	Owns: methods and methods of planning, management in accordance with modern requirements
LO 3	Knows fundamentals of modeling, calculation of reliability of vehicle parts; requirements for transport equipment, its diagnostics,
_	maintenance and operation
	Can: use the methods of technical and economic analysis and conditions for making engineering and management decisions
	Owns: methods of assessing the reliability of transport equipment and technological equipment
LO 4	Knows: fundamentals of patenting, conditions for the organization of intellectual property protection;
	Can: use search methods for patent information sources
	Can: to prepare materials for patenting inventions and for commercialization of the results of scientific research.
LO 5	Knows: structural elements of intelligent transport systems;
-	Can: uses software and hardware components of intelligent transport systems in the organization of transportation processes.
	Owns: methods of analysis of technical, technological, material science components in the organization of transportation processes
LO 6	Knows: conditions for research work and technical tests with the use of digital technologies and automated control systems;
	Can: design and model transport systems and structures, conduct technical tests
	Owns: methods of analyzing research and test results
LO 7	Knows: the basics of interaction of modes of transport in the organization of transportation and documentation support of professional
	activity
	Can: design and model transport infrastructure
	Owns: technology of documentation support of professional activity.
LO 8	Knows: fundamentals of modeling, calculation of reliability of vehicle parts; requirements for transport equipment, its diagnostics and
	maintenance and operation
-	Can: determine the conditions for the diagnosis and maintenance of transport equipment.
	Owns: methods of modeling, calculating the reliability of vehicle parts and ways to determine their effectiveness
LO 9	Knows: interstate, international and national standards, fundamentals of standardization, metrology, certification
	Can: determine the conditions for the application of standards, technical regulations, permits
	Owns: modern measuring technologies and methods of determining the quality of products
LO 10	Knows: fundamentals of the organization of transport and logistics systems; structure and conditions of use of structural, composite and operational materials
	Can: use methods of testing and quality control of structural composite and operational materials
	Owns: methods of mathematical modeling of transport processes
LO 9	Can: determine the conditions for the diagnosis and maintenance of transport equipment. Owns: methods of modeling, calculating the reliability of vehicle parts and ways to determine their effectiveness Knows: interstate, international and national standards, fundamentals of standardization, metrology, certification Can: determine the conditions for the application of standards, technical regulations, permits Owns: modern measuring technologies and methods of determining the quality of products Knows: fundamentals of the organization of transport and logistics systems; structure and conditions of use of structural, composite and operational materials Can: use methods of testing and quality control of structural, composite and operational materials. Owns: methods of mathematical modeling of transport processes

Criteria for assessing the achievability of learning outcomes7M07107- Transport, transport equipment and technologies

EDUCATIONAL PROGRAM DEVELOPMENT PLAN 7M07107- Transport, transport equipment and technologies

The purpose of the Plan is to contribute to improving the quality of the conditions for the implementation of the educational program, taking into account the current requirements of the labor market and the achievements of modern science.

Target indicators

№	Indicators	Unit of measurement	2024-2025 (plan)	2025-2026 (plan)	2026-2027 (plan)
1	Human resources development	measurement	(piuii)	(pian)	(plui)
1.1	Increase in the number of teachers with academic degrees	Number of people	1	1	1
1.2	Advanced training in the teaching profile	Number of people	5	5	5
1.3	Involvement of practitioners in teaching	Number of people	1	1	1
1.4	Other	Number of people			
2	Promotion of the EP in the ratings				
2.1	IQAA	Position	3	2	1
2.2	IAAR	Position	3	2	1
2.3	Atameken	Position	3	2	1
3.	Development of educational and scientific- methodical literature, electronic resources				
3.1	Textbooks	Number			
3.2	Training manuals	Number	2	3	3
3.3	Methodological recommendations/instructions	Number	3	3	3
3.4	Electronic textbook	Number	4	4	4
3.5	Video/audio lectures	Number	3	3	3
3.6	Other	Number			
4.	Development of educational and laboratory facilities	Number			
4.1	Purchase of software products	Number	1	1	1
4.2	Purchase of equipment	Number	1	1	1

4.3	Other	Number			
5.	Updating the content of the EP				
5.1	Updating the learning outcomes and the list of	Year		+	
	disciplines taking into account the requirements of				
	the labor market, scientific achievements, profes-				
	sional standards				
5.2	Introduction to the EP of academic disciplines in	Year	10 A	+	
	foreign languages*				
5.3	Introduction of new teaching methods	Year	+	+	
5.4	Opening of joint/two-degree program on the basis	Year	+	A	
1	of the EP				
5.5	Other	Year			

Head of the Department of Transport and Logistics Systems

Ranf

I.M.Kamzabekov