Ministry of Science and Higher Education of the Republic of Kazakhstan
Karaganda University named after academician E.A.Buketov

«APPROVED»
The Chairman of the Board is the Rector of Karaganda State University. academician E.A.Buketov
Protocol № 2 «20» 06 2024 г.
Prof. N.O.Dulatbekov

«APPROVED»
By the decision of the Board of Directors of the NJC "Karaganda University named after Academician E.A.Buketov"
Protocol № 5 «21» 06 2024 г.

EDUCATIONAL PROGRAM

7M07107-Transport, transport equipment and technologies

Level: Master's Degree

Karaganda
2024

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

«AGREED»
General manager
LLP «QazTehna»
_____ A.S. Maikonov
«17» 04 2024

«AGREED»
Chief
The Regional Transportation Management Center
of the branch of JSC NC "KTZ"
Akmola branch of the backbone network
_____ Zh. Zhumashev
«17» 04 2024

«AGREED»
Manager
LLP «Bus park №2» Karaganda
_____ G.M. Zhaksybaev
«17» 04 2024

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)

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 competencies	Learning result code	Learning outcomes (according to Bloom's taxonomy)
1. Behavioral skills and personal qualities: (Soft skills)	RO1	Analyzes professional technical and technological information in a foreign language, methodological problems, the results of a scientific experiment in solving research problems and organizing higher education.
	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 directions 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, technological, material science components in the organization of transportation and operation of transport.
	RO 6	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.
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 historical aspects of teaching in higher education	History and philosophy of science	4
		Higher school pedagogy	4
		Management Psychology	4
		Pedagogical practice	4
RO1,	Professional languages	Foreign language (non-professional)	**4**
RO1, RO4, RO6, RO7	Science and innovation	Foreign terminology in the transport system Intercultural aspects of business communication in the international transport sector	4 6
		Commercialization of the results of scientific and scientific-technical activities Organization of the transportation process	5
		Methods of research activity Experiment planning	
RO3, RO5, RO8	Technical and technological components of the transport process	Methods of evaluation and testing of transport equipment	4
		Operation and maintenance of transport equipment	6
RO5, RO6, RO8, RO9, RO10	Modeling in the transport system	Digitalization of the transport industry Intelligent transport systems	4
		Patenting Technical regulation and ensuring the uniformity of measurement	7
		Promising structural and operational materials Methods and means of diagnosing transport equipment	5
		Relationship of modes of transport Transport and technological support of industry	6
		Design and organization of transport and logistics systems Modeling of transport processes	7
RO5, RO6, RO8, RO9, RO10	Research practice	Research practice	14
RO5, RO6, RO8, RO9, RO10	Research work	Research work of a master's student, including internship and completion of a master's thesis (NIRM)	24
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 п/п	Discipline Name	Brief description of the discipline (30-50 words)	Number of credits	Generated learning outcomes (codes)									
				RO1	RO2	RO3	RO4	RO5	RO6	RO7	RO8	RO9	RO10
D1	History and philosophy of science	The purpose of the discipline is to study the philosophical phenomena of 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.	4	+									
D2	Pedagogy of higher education	The course highlights the main provisions on the content of higher 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.	4	+									
D3	Psychology of management	The course is aimed at forming undergraduates' knowledge about the 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.	4		+	+							
D4	Foreign language (professional)	The academic discipline implements the basic part of the general scientific curriculum of the Master's degree program and is an organizational part of the process of training highly qualified specialists who actively speak a 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	Intercultural aspects of business communication in the international transport sector	The purpose of the discipline is to form the necessary communicative skills and abilities necessary for effective intercultural communication in the field of transport, to acquaint masters with the peculiarities of the language of business correspondence focused on specialized contexts characteristic of the transport sphere of business activity.	4							+			
	Foreign terminology in the transport system	The course examines such issues as the specifics of oral professional speech; the concept of "special language"; the conditions for the functioning 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; lexical and grammatical minimum. The aim of the course is to develop the skills necessary for undergraduates to read and translate (with a dictionary) foreign texts of a professional orientation; to use the rules of spelling and punctuation.		+									
D6	Organization of the transportation process	The course is designed to study the problems of the development of transport services and the organization of safe transportation by vehicles, indicators and characteristics of the transportation process, principles of	6						+				

		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 scientific-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 planning; 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, conditions for ensuring stability, patency, smoothness, comfort of vehicles; criteria for comparing and evaluating transport equipment; construction of transport equipment; methods of engineering calculations of dynamic systems 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, automatic 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 undergraduates the theoretical and practical basics of using software and hardware components of intelligent transport systems in the field of planning, organization 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										+	

		the rights and obligations of patent holders, authors and owners of intellectual property objects; ways to protect their rights.												
	Technical regulation and ensuring the uniformity of measurement	The discipline considers the regulatory framework of technical regulation and ensuring the unity of measurement in the organization of the transport process. The aim of the course is to develop undergraduates' skills in applying the methods and practical foundations of the course in calculating the errors of measuring instruments; to use standards and other regulatory and technical documentation for the regulation and effective use of transport equipment.										+		
D12	Promising structural and operational materials	The discipline studies the properties of modern materials used in the automotive industry, methods of their selection in the design of various systems and components of vehicles, and also considers the properties of fuels, oils and other operational fluids and ways to improve these properties. The aim of the course is to develop undergraduates' skills in choosing the necessary materials, the degree of accuracy, surface quality and the purpose of the technical conditions for the manufacture of machine parts and equipment.	5					+						+
	Methods and means of diagnosing transport equipment	The process of diagnosis. Diagnostic standards. Requirements for the technical condition of cars. Purpose, device, equipment, organization of the technological process of diagnostics. Mobile diagnostic stations. Diagnostic scanners, probes. Computer motor testers. Diagnosis of a gasoline engine. Diagnostics of brake systems with hydraulic brake drive. Diagnostics of brake systems with pneumatic brake drive. Equipment and methods for diagnosing steering, tires and wheels.										+		
D13	Transport and technological support of industry	The course is designed to study the components of ground-based transport and technological complexes that ensure the operation of industry; operating conditions of technological equipment, devices, nodes, systems and transport and technological machines for various purposes. The purpose of the course is the formation of organizational and managerial skills to ensure the operation of transport and technological machines used in the branches of the national economy, in accordance with the requirements of regulatory and technical documents.	6					+						
	Relationship of modes of transport	The course is designed to study the conditions for the effective organization of forms of interaction of various modes of transport in transport hubs when solving problems of the transportation process; rational use of various modes of transport; improving the technology of transportation of goods, passengers by various modes of transport						+						
D14	Design and organization of transport and logistics systems	The purpose of studying the discipline is to form the professional knowledge of undergraduates on general and specific issues of designing transport and logistics systems, organizing services for the organization of cargo transportation by any means of transport; the organizational and legal status of the carrier agent and freight forwarder; contractual, legal and technological provisions of transport operations; skills in registration of transportation documents of freight forwarding services	7											+
	Modeling of transport processes	The discipline studies the theory of road freight transportation and mathematical models for calculating the output of cars; methods of planning and organizing the transportation of goods by road; systems of technical and operational indicators of rolling stock.										+		+

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, methodological 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 assessing their reliability. Uses methods of technical and economic analysis and conditions for making 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, conditions 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 testing, 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 competencies	Description of competencies
1. Behavioral skills and personal qualities: (Soft skills)	Understands scientific and philosophical, socio-economic, organizational and managerial aspects of the organization of activities in transport. He is able to scientifically organize professional activities and effectively focus on results. Ready for innovation, self-education and professional activity in a foreign language environment
2. Digital competencies: (Digital skills):	Understands the conditions of integration of digital technologies and the transport process; the essence and structure of intelligent transport systems. Demonstrates the ability to solve the tasks of organizing monitoring of transport and transport and logistics systems
3. Professional competencies:	Has a scientific approach to solving design and technological and transport-technological tasks. A scientific approach and logical 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. _____ I.M.Kamzabekov
1st year Master's student _____ Z.S. Blyalova

The educational program was reviewed and recommended by the Faculty Council from 25.04.24 Protocol No. 9
The educational program was reviewed at the meeting of the Academic Council from 29.04.24 Protocol No. 3
The educational program was reviewed and approved at the meeting of the University Board from 24.05.24 Protocol No. 8

Member of the Board - Vice-Rector for Academic Affairs — M.M. Umurkulova

Acting Director of the Department for Academic Work — T.M. Khasenova

Dean of the Faculty of Physics and Technology — A.K.Zeinidenov

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

Codes of LO	Planned learning outcomes for the module
LO1	Knows: methodological problems of scientific experiment and conditions of the organization of the educational process in higher education
	Can: analyze, process, generalize and reproduce technical and technological information in a foreign language and solve research problems.
	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;
	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

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**				
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 disciplines taking into account the requirements of the labor market, scientific achievements, professional standards	Year		+	
5.2	Introduction to the EP of academic disciplines in foreign languages*	Year		+	
5.3	Introduction of new teaching methods	Year	+	+	
5.4	Opening of joint/two-degree program on the basis of the EP	Year	+		
5.5	Other	Year			

Head of the Department of Transport and Logistics Systems **I.M.Kamzabekov**