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KARAGANDA TECHNICAL UNIVERSITY NAMED AFTER ABYLKAS SAGINOV"

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"Karaganda branch of the State  
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" \_\_\_\_\_ » \_\_\_\_\_ 2023

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APPROVED

By decision of the Academic Council

Protocol No. \_\_\_\_\_ from \_\_\_\_\_ 2023

Member of the Board – Vice-

Rector for Academic Affairs

\_\_\_\_\_ A.M. Temerbaeva

**MODULAR EDUCATIONAL PROGRAM**

**in the direction of training 6B113 “Transport services” 6B11301**

**“Organization of transportation, traffic and operation of transport”**

Level: Bachelor's degree

Degree awarded: “Bachelor of Services”

Karaganda 2023

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## **Introduction**

The modular educational program 6B11301 “Organization of transportation, traffic and operation of transport” was developed on the basis of the following regulatory documents:

Law of the Republic of Kazakhstan “On Education” dated July 27, 2007 No. 319-III ZRK, with amendments and additions dated March 27, 2023 No. 216-VII.

Model rules for the activities of organizations of higher and (or) postgraduate education (Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No. 595, with amendments and additions dated January 20, 2023 No. 23).

State Compulsory Standards of Higher and Postgraduate Education (GOSO) (Order of the Minister of Science and Higher Education and Science of the Republic of Kazakhstan dated July 20, 2022 No. 2, with amendments and additions dated February 20, 2023 No. 66).

Rules for organizing the educational process on credit technology of education in organizations of higher and (or) postgraduate education (Order of the Minister of Education and Science of the Republic of Kazakhstan dated April 20, 2011 No. 152, with amendments and additions dated April 5, 2023 No. 145).

Qualification directory of positions of managers, specialists and other employees, approved by order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated December 30, 2020 No. 553, changes and additions dated August 12, 2022 No. 309.

Professional standard “Transport and forwarding services” (Order of the Deputy Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan “Atameken” No. 239 dated 09/06/2018).

Industry qualifications framework in the direction of “Railway Transport” (Approved by the Minutes of the meeting of the industry commission on social partnership and regulation of social and labor relations in the field of railway transport of the Ministry of Internal Affairs of the Republic of Kazakhstan on approval of the project “Industry qualifications framework in the field of railway transport”, No. 1, 06/27/2019 .; Association of legal entities “Union of Transport and Logistics Organizations and Associations “Kazlogistics” (Union of Transport Workers of Kazakhstan).

Atlas of new professions and competencies of Kazakhstan, developed by the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan, No. 08. Transport and logistics, 2020.

A modular educational program is a comprehensive document that defines the goals, objectives and results of education, the structure and content of working curricula and programs, methods and methods of their implementation, educational, methodological and resource support for the educational process and criteria for assessing the educational achievements of students.

## **1 Goals of the Modular Educational Program**

The application of this Modular educational program provides for the achievement of the following goals:

- to put into practice the democratic principles of managing the educational process, to expand academic freedom and the capabilities of higher educational institutions;
- ensure adaptation of higher education in the specialty and scientific research to the changing needs of society and the achievements of scientific thought;
- ensure recognition of the level of training of specialists in other countries;
- ensure higher mobility of graduates in changing labor market conditions;
- training of specialists for organizing transportation and operation of transport.

## **2 Passport of the Modular educational program**

### **2.1 List of qualifications and positions**

The graduate of this Modular educational program is awarded the degree “Bachelor in Services”.

Qualifications and positions are determined in accordance with the “Qualification Directory of Positions of Managers, Specialists and Other Employees”, approved by Order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated December 30, 2020 No. 553, c.changesand additions dated August 12, 2022 No. 309.

### **2.2 Qualification characteristics of the graduate**

#### **2.2.1 Field of professional activity**

The sphere of professional activity of graduates is the sphere of material production, which includes a set of means, methods and methods of human activity aimed at solving complex problems related to the organization of traffic in transport, modeling and design of vehicle traffic, the study of processes and patterns of organizing operational work based on modern management and marketing; improving the process of transportation and interaction between modes of transport based on logistics principles, as well as research activities aimed at increasing the efficiency of using transport in a market economy.

#### **2.2.2 Objects of professional activity**

The objects of professional activity of graduates are enterprises and departments of transport, regional transport authorities and state transport inspections, freight forwarding enterprises and organizations.

#### **2.2.3 Subject of professional activity**

The subjects of professional activity of graduates are technical devices and structures of transport enterprises, technological processes of their work, industrial enterprises and organizations - users of transport services; warehousing and auxiliary transport activities, auxiliary activities during transportation, other auxiliary services during transportation, freight forwarding services.

#### **2.2.4 Types of professional activities**

“Bachelor in the field of services” in the educational program 6B11301 – “Organization of transportation, traffic and operation of transport” can perform the following types of professional activities:

organizational and technological activities: organization of work on the design of management methods; ensuring safety in various conditions; organizing the work of a team of performers, taking into account different opinions and making management decisions; compromise solutions taking into account various requirements (cost, quality, deadlines and safety) with different types of planning and determining optimal solutions; operation of vehicles and systems;

production and management activities: assessment of production and non-production costs to ensure traffic safety; assessment of production and non-production costs for the development of transport and technological systems for the delivery of cargo, passengers, luggage, mail and monitoring their operation; quality control of technological processes, materials and finished products; metrological verification of means for measuring product quality indicators; carrying out measures for standardization and certification of reloading machines and equipment, technology for their manufacture and repair.

calculation and design activities: development of plans for the development of transport enterprises, traffic management systems; determining the goals and objectives of the project, taking into account various factors when constructing the structure of their relationships and identifying priority areas for solving problems; development and analysis of options for solving problems, predicting consequences, planning and implementation of projects; development of designs for machines and equipment taking into account technological, design, aesthetic, economic and other parameters; use of information technology in the selection of materials, transport equipment and equipment;

service and operational: development and implementation of technology for providing services for the registration of transportation of goods, cargo luggage, passengers; provision of advertising and information activities in transport; proper maintenance of technical devices and structures in transport to ensure the safety of the transportation process.

#### **2.2.5 Functions of professional activity**

The main functions of graduates’ professional activities are: organization, management and logistics; marketing and industry management; design; service and operation.

#### **2.2.6 Areas of professional activity**

Areas of professional activity include:

- development of measures to improve logistics management systems in transport;
- selection and effective use of transport equipment, equipment and other means for the implementation of production processes;
- forming the project goal, solving transport problems, criteria and indicators for achieving the goal, building the structure of their relationships;
- organization and effective implementation of various transport and technological systems for the delivery of goods and passengers, luggage and mail based on the use of modern methods of marketing and management;
- performance or organization of performance of services specified in the forwarding agreement related to the transportation of goods by one or more modes of transport.

## Map of the Modular Educational Program

Code and name module	Code and name of the discipline	Cycle/ component	Form control	Semester	Volume of loans ECTS	Formed competencies
<i>OOD – General education disciplines</i>						
<i>OK - Required component</i>						
OOD 01 General education module disciplines 1	IK 1101 History of Kazakhstan	OOD/OK	State exam	2	5	<p><b>Know:</b> objective knowledge about the main stages of development of the history of Kazakhstan from ancient times to the present;</p> <p><b>Be able to:</b> demonstrate knowledge and understanding of key developmental milestones history of Kazakhstan; determine the role of the history of Kazakhstan in the system of humanitarian knowledge; identify the specifics of the object and subject of the history of Kazakhstan to analyze current problems of the current stage of development; systematize and give a critical assessment of historical phenomena and processes in the history of Kazakhstan; be able to objectively and comprehensively comprehend the inherent features of the modern Kazakhstan development model; systematize knowledge about the main events of the modern history of Kazakhstan;</p> <p><b>Have skills:</b> analytical and axiological analysis in the study of historical processes and phenomena of modern Kazakhstan;</p> <p><b>Be competent:</b> in the ability to correlate phenomena and events of the historical past with the general paradigm of the world-historical development of human society through critical analysis.</p>
	Phil 2102 Philosophy	OOD/OK	Exam	4	5	<p><b>Know:</b> subject, functions, main sections and directions of philosophy; actual problems modern domestic and world philosophy;</p> <p><b>Be able to:</b> use the provisions and categories of philosophy to evaluate and analyze various social trends, facts and phenomena;</p> <p><b>Have skills:</b> apply the acquired knowledge in life situations and in the analysis of social phenomena;</p> <p><b>Be competent:</b> in the main problems and trends in philosophy, in the study of philosophical problems of our time, as well as methods and approaches.</p>
	IYa 1103 Foreign language	OOD/OK	Exam	1.2	10	<p><b>Know:</b> the lexical and grammatical minimum of a foreign language of a general and professional nature to the extent necessary for the implementation of communicative intentions in all types of speech activity within the framework of the achieved level in accordance with the Common European Framework of Reference for Foreign Languages;</p> <p><b>Be able to:</b> realize your knowledge, abilities, skills and practical experience in the course of interaction with representatives of a different culture;</p> <p><b>Have skills:</b> oral and written foreign language speech in accordance with the achieved level,</p>

						reflected in the descriptors within the framework of the Common European Framework of References for Languages standards; <b>Be competent:</b> in the use of a foreign language in communicativecommunication situations with awareness of the need to use appropriate speech patterns and tactics of speech behavior in interaction with representatives of a different culture.
K(R)Ya 1104 Kazakh (Russian) language	OOD/ OK	Exam	1.2	10		<b>Know:</b> norms of literary language; definition: text, main idea, topic and paragraph of text; functionalspeech styles, their characteristics and rules of use; features of oral and written business communication; composition and language requirements for public speaking; about lexical and grammatical units based on information and educational texts; about the ability to distinguish the features of written and oral types of business and scientific styles; about functional styles of language, the scope of their use, about the main stylistic features and linguistic features; about the features of oral public speech; about the history, literature, customs, traditions, science, art, poets and writers of the Kazakh people: about the main speech thematic and compositional types - monologue-description, monologue-reasoning, monologue-exposition, monologue-analysis, dialogue-story; successful mastery of types of speech activity in accordance with the level of training; formation and improvement of language skills in various situations of everyday, socio-cultural, professional communication; developing skills in producing oral and written speech in accordance with the communicative purpose and professional sphere of communication; <b>Be able to:</b> analyze the structural and semantic organization of the text; determine linguistic means of text organization; determine the structural and semantic features of texts of various styles; work with texts of different styles and genresbased on completing a system of tasks and training exercises; make the correct choice and use of linguistic and speech means to solve certain problems of communication and cognition based on knowledge of a sufficient amount of vocabulary, a system of grammatical knowledge, and pragmatic means of expressing intentions; convey the factual content of texts, formulate their conceptual information, describe inferential knowledge (pragmatic focus) of both the entire text and its individual structural elements; interpret text information, explain, within the scope of certification requirements, the style and genre specificity of texts in the socio-cultural, socio-political, official, business and professional spheres of communication; <b>Have skills:</b> express your opinion: learn to compose a descriptive monologue, organize a conversation, debate; develop the ability to speak using professional vocabulary, formability and skills to speak actively, generally; request and provide information in accordance with the communication situation, evaluate the actions and actions of participants, use information as a tool to influence the interlocutor in situations of cognition and communication in accordance with certification requirements; build programs of speech behavior in situations of personal, social and professional communication in accordance with the norms of language, culture, specifics of the sphere of communication, certification requirements; <b>Be competent:</b> in the process of mastering all types of speech activity and the basics oral and written speech; in understanding various types of communicative statements, as well as in constructing holistic and logical statements of different functional styles;

						in discussing ethical, cultural, socially significant problems, expressing one's point of view, the ability to defend it reasonably, and critically evaluate the opinions of interlocutors; in the process of communication in various situations in different spheres of communication in order to realize one's own intentions and needs (domestic, educational, social, cultural); in the ability to compose everyday, socio-cultural, official and business texts in accordance with generally accepted norms, functional orientation using lexico-grammatical and pragmatic materials at a certain certification level.
	IKT 1105 Information and communication technologies	OOD/ OK	Exam	2	5	<b>Know:</b> economic and political factors contributing to the development of information and communication technologies; features of various operating systems; architecture, be able to calculate and evaluate performance indicators of supercomputers; <b>Be able to:</b> identify the main trends in the field of information and communication technologies; use information resources to search and store information; work with spreadsheets, consolidate data, build graphs; work with databases; apply methods and means of protecting information; design and create simple websites; process vector and raster images; create multimedia presentations; <b>Have skills:</b> use various social platforms for communication, various forms of e-learning to expand professional knowledge; use various cloud services; <b>Be competent:</b> when using modern information and communication technologies in various fields of professional activity, scientific and practical work for self-educational and other purposes.
	SPZ (SPKP) 2106 Module socio-political knowledge (sociology, political science, cultural studies, psychology)	OOD/ OK	Exam	3.4	8	<b>Know:</b> typology and basic conditions for the emergence and development of social movements, factors of social development, forms of social interaction, theory of social stratification and social mobility, role theory of personality. The essence, possibilities, boundaries and prospects of politics, the system and functions of political power, political regimes and institutions, state structure, its genesis and role in the life of society, political processes in the world and their connection with political processes in the Republic of Kazakhstan, the main global challenges of our time. The content of the global cultural-historical process, its stages and main conceptual approaches. Basic categories and concepts of psychological science; basic mental functions; basics of personality psychology; patterns of human mental development; <b>Be able to:</b> give an analysis and assessment of social phenomena occurring in society. Consider politics as one of the forms of human activity in the structure of modern society, interact with government structures, formulate one's own interests and express them through the structures of civil society, apply political knowledge to solving professional problems, cultivate leadership qualities, strive for the worthy fulfillment of one's civil and professional duty. Use general cultural and moral and ethical legacy in professional activities. Assess the place of culture in human life.



						<p>Diagnose individual psychological and personal characteristics of people, the styles of their cognitive and professional activities; use psychological knowledge to solve research and practical problems;</p> <p><b>Have skills:</b>preparation and organization of specific sociological research. Independent analysis of the political situation in the country and in the world, the ability to assess the prospects for the development of modern political processes; search and analyze the necessary information, evaluate its significance, and use it in the decision-making process. The main general humanitarian categories, the method of analyzing sociocultural processes, the skills of caring for cultural values and sociocultural openness. Operate with the main categories of psychological knowledge; assess the level of formation of mental processes;</p> <p><b>Be competent:</b>in knowledge of the basic concepts and theories of sociology, methodology and methods of sociological research; History of political thought, about modern political institutions, their structure and functioning, about the rights, freedoms and responsibilities of citizens, about the methods and forms of participation in political life, about the political situation in the modern world. Mastering the discipline is aimed at developing general cultural competencies: the ability and willingness to carry out activities in various spheres of public life, taking into account the moral and legal norms accepted in society; the ability and willingness to understand the role of art, to strive for aesthetic development and self-improvement, to treat historical heritage and cultural traditions with respect and care, tolerantly perceive social and cultural differences, to understand the diversity of cultures and civilizations in their interaction. In the field of analysis of the characteristics of psychological institutions in the context of their role in society; conflict prevention technologies.</p>
	FK 2107 Physical culture	OOD/ OK	Exam	1,2,3,4	8	<p><b>Know:</b>the role of physical culture in human development and specialist training; fundamentals of state policy of the Republic of Kazakhstan in the field of physical culture and sports; Be able to: use practical skills in life that ensure the preservation and strengthening of health, development and improvement of psychophysical abilities and qualities; apply the rules for safe conduct of physical exercises and sports;</p> <p><b>Have skills:</b>possess health saving skills; master the technique and tactics of the chosen sport; provide assistance in organizing competitions and judging; Be competent: independently use the skills of professional adaptive physical culture in work and life situations, develop skills of participation in various types of competitive activities, use various forms and types of physical education to organize a healthy lifestyle, active rest and leisure.</p>
<b>VK - University component</b>						
OOD 02 General education module	OROAK 3108 Fundamentals of law, Fundamentals of anti-corruption	OOD/ VK	Exam	6	5	<p><b>Know:</b>history of state and law, the main institutions of branches of law, their structure and functioning, the rights, freedoms and responsibilities of citizens and their application in everyday life, the main provisions of the Constitution of the Republic of Kazakhstan, the main provisions of the current current legislation of Kazakhstan, the system of government bodies and</p>

disciplines 2	culture					<p>the range of their powers, the mechanism of interaction between substantive and procedural law. The essence of corruption and the reasons for its origin, the measure of moral and legal responsibility for corruption offenses, current legislation in the field of combating corruption;</p> <p><b>Be able to:</b>analyze events and actions from the point of view of the field of legal regulation and be able to refer to the necessary regulations; navigate the current legislation; Using the law, protect your rights and interests. Realize the values of moral consciousness and follow moral standards in everyday practice, work to increase the level of moral and legal culture, use spiritual and moral mechanisms to prevent corruption;</p> <p><b>Have skills:</b>conducting discussions on legal issues, on the application of norms in the modern period, legal analysis of various documents. Analyze situations of conflict of interests and moral choice;</p> <p><b>Be competent:</b>in matters of law, its use in life, in practice and employment. In matters of the causes and origin of corruption, the essence and factors of corruption and its various manifestations.</p>
	OEP 2109 Basics of Economics and entrepreneurship	OOD/ VK	Exam	4	5	<p><b>Know:</b>economic patterns of development of society and problems of its effective functioning, scientific and legislative foundations for organizing and conducting business activities;</p> <p><b>Be able to:</b>apply economic knowledge to determine the most effective actions, collect and analyze initial data to evaluate a business idea and write a business plan; assess the commercial prospects of the project; competently use elements of business infrastructure, including government support, to ensure the effective functioning of the enterprise in the current conditions;</p> <p><b>Have skills:</b>analysis and processing of economic information, organization and conduct of business;</p> <p><b>Be competent:</b>in matters of drawing up a business plan, analyzing the external and internal environment of the enterprise, determining the economic efficiency of the project.</p>
	EBZhD 2110 Ecology and safetylife activity	OOD/ VK	Exam	4	5	<p><b>Know:</b>basic patterns of interaction between nature and society, dangers of the habitat; the influence of harmful production factors on economic objects and the state of the environment; fundamentals of legislation in the field of environmental protection and safety; principles of organizing environmentally friendly production processes, conducting rescue and other urgent work in emergencies;</p> <p><b>Be able to:</b>assess the technogenic impact of production on the environment; critically comprehend the trends in the development of ecological and economic systems associated with the use of natural resources and characterize their environmental consequences; ensure the sustainability of the functioning of economic facilities;</p> <p><b>Have skills:</b>studying the components of ecosystems and the biosphere as a whole; determining optimal conditions for the sustainable development of ecological and economic systems; solving environmental problems; knowledge of standard environmental monitoring techniques; search and systematization of scientific and specialized literature; organizing rescue and other emergency operations; application of funds</p>

						individual protection, provision of pre-medical care to victims, creation of a normal (comfortable) state of the human environment; <b>Be competent:</b> in planning, development and implementation of measures to increase the sustainability of economic facilities in emergencies and in eliminating the negative consequences of the impact of modern weapons, in matters of environmental safety of the transport industry.
	MNI 3111 Scientific Research Methods	OOD/ VK	Exam	6	5	<b>Know:</b> methodological foundations of the organization and technology of scientific research (categories and concepts of scientific research; classification of scientific research; technology for processing experimental results; methodological culture of the researcher; <b>Be able to:</b> choose and use scientific research methods that are adequate to its goals and objectives, allowing to obtain reliable and reliable data; conduct scientific experiments; apply methods of statistical processing of information when solving research and professional problems; analyze scientific texts from the point of view of their methodological foundations and principles; <b>Have skills:</b> on developing methodological characteristics of the study and determining their relationship: justification of the topic, relevance and problem of the study; defining the goal, object, subject of research and expected results; constructing a hypothesis and research objectives in accordance with the goal; development of criteria for evaluating experimental activities; <b>Be competent:</b> in organizing and conducting scientific research in the field of professional activity.
<b>BD - Basic disciplines</b>						
<b>VK-University component</b>						
EN 03 Natural Science Module	Mat 1201 Mathematics	DB/VK	Exam	1	5	<b>Know:</b> basic mathematical definitions and concepts; mathematical concepts and understand the relationships between them and their differences; mathematical methods for solving various transport problems; <b>Be able to:</b> apply analytical methods for analyzing mathematical models of transport problems; use mathematical apparatus to calculate the optimal parameters of transport problems; <b>Have skills:</b> create a mathematical model of the situation, analyze and transform it, interpret the results obtained; apply mathematical methods of theoretical and applied research when solving transport problems; <b>Be competent:</b> in the use of basic mathematical laws in professional activities; in integrating knowledge from various sections of the mathematics course; in generalizing and analyzing information, formulating mathematical models of practical problems, choosing ways to solve them.
	PM 2202 Appliedmat hematics	DB/VK	Exam	3	5	<b>Know:</b> mathematical patterns and understand the relationships between; area of application of mathematical methods in professional activities; <b>Be able to:</b> use elements of mathematical model analysis; applymathematical apparatus for calculations;

						<p><b>Have skills:</b> create a mathematical model of the situation, analyze and transform it, interpret the results obtained;</p> <p><b>Be competent:</b> in generalizing and analyzing information, formulating mathematical models of practical problems, choosing ways to solve them; in mastery of mathematical thinking and mathematical language.</p>
Fiz 1203 Physics	DB/V K	Exam	1	5	<p><b>Know:</b> trends in the development of modern physics and basic laws in the field of quantum and nuclear physics, their application in new branches of science and technology; methodology for conducting physical research; the influence of physics, as a fundamental science, on the development of future technology and further scientific and technological progress, including in relation to the chosen specialty;</p> <p><b>Be able to:</b> use modern physical principles in the areas of technology in which the student specializes; formulate a physical problem and propose methods for solving it; apply theoretical knowledge to solve specific physical problems, analyze the results of a physical experiment using various software and Internet resources.</p> <p><b>Have skills:</b> conducting experimental scientific studies of physical phenomena by planning an experiment (partially); work with equipment at the appropriate level; solving problems in a specific field of professional activity, understanding and using laws from all main branches of physics;</p> <p><b>Be competent:</b> in determining the range of physical laws for solving problems of the future specialty; areas of processing, analysis and evaluation of experimental data results; able to competently conduct a physical experiment, understand its objectives and interpret its results</p>	
UP 1204 Educational practice	DB/V K	Ek-replacements, report	2	5	<p><b>Know:</b> directions of activity of the enterprise, types, functions and tasks of future professional activity; job responsibilities of engineering and technical workers of the enterprise;</p> <p><b>Be able to:</b> independently formulate, determine methods and means of performing professional tasks, be able to build models of professional tasks and interpret the results obtained, adapt to external conditions and implement standard technological transport processes, as well as develop and implement new types of transport services; be able to analyze and optimize the operation of the transport system at all levels; carry out organizational and technological activities in railway and industrial transport, organize the operation of vehicles and intelligent systems;</p> <p><b>Have skills:</b> use of information processing and analysis tools; working with technical documentation; studying the transportation process, traffic organization and operation of transport;</p> <p><b>Be competent:</b> in the analysis and assessment of the performance of professional tasks and meaningful interpretation of the results obtained; in adaptation and implementation of standard technological processes; in applying the acquired knowledge when solving specific problems in the field of transportation organization.</p>	

OPP 04 Module Organization of the transportation process	VVT 3205 Interaction of modes of transport	DB/VK	Exam	6	5	<p><b>Know:</b>methodologycalculating performance indicators of business activity, the development of modes of transport and their technical and economic characteristics; about the main transport flows; about the types of message distribution; about cargo and passenger flows and their classifications; transportation route and transportation conditions for each route; forms of interaction between modes of transport; general patterns of development of technical means and operation of modes of transport;</p> <p><b>Be able to:</b>carry out development and make decisions in different types of planning and determining optimal solutions with changes in information flows in transport, be able to organize the operation of vehicles and intelligent systems; interact with transport and freight forwarding organizations; determine the structure and capacity of transport hubs;</p> <p><b>Have skills:</b>identify technological connections between elements of the transportation process;organization of multimodal transportation; coordinating the operation of modes of transport during passenger transportation; organizing interaction between modes of transport during non-transshipment transportation;</p> <p><b>Be competent:</b>in making management decisions on the organization of transportation and operation of transport and in planning and organizing the work of transport complexes, organizing the rational interaction of modes of transport that make up a unified transport system using electronic document management.</p>
	Gruz 3206 Cargo Science	DB/VK	Exam	5	5	<p><b>Know:</b>theoretical and practical knowledge in the field of preparation, storage and loading and unloading of certain types of cargo, classification of cargo and their physical and chemical properties, volumetric and mass characteristics of cargo;</p> <p><b>Be able to:</b>determine the quality of cargo, preparation for transportation and master storage conditions; organi-call the processes of packaging and preparing cargo for transportation;</p> <p><b>Have skills:</b>in placing and securing cargo on rolling stockdifferent ways; ability to work as part of a team of performers to monitor and manage the movement of cargo; determining the quality of cargo and its value;</p> <p><b>Be competent:</b>in understanding the importance of classifying goods according to their individualproperties; making management decisions on the organization of transportation and operation of transport and in planning and organizing the storage of goods, organizing the rational interaction of modes of transport that make up a unified transport system using electronic document management.</p>
	LT 4207 Logisticson transport	DB/VK	Exam	8	5	<p><b>Know:</b>the essence of new logistics technology and understand the problems of managing the distribution of goods using intelligent transport systems; methods for assessing the costs and results of a transport organization’s activities;</p> <p><b>Be able to:</b>calculate transportation costs based on available data, solve logistics problems based on methods of consistency, complexity, systematization, perform optimization calculations of basic logistics processes;</p> <p><b>Have skills:</b>calculating the cost of transportation based on available data, using intelligent transport systems; carry out production and management activities in railway and industrial transport; skills of working as part of a team of performers carrying out control and management of traffic organization;</p>

						<b>Be competent:</b> in general principles functioning of transport and logistics systems; in regulatory documents regulating transport activities in the Republic of Kazakhstan and in international traffic.
	PP1 2208 Production practice 1	DB/V K	Ek-repl ace men ts, Rep ort	4	5	<b>Know:</b> main production tasks of a transport enterprise; job responsibilities of engineering and technical workers of the enterprise; <b>Be able to:</b> develop events to ensure safety in various conditions and at various stages of the transport process; ability to control the quality of technological processes, materials and finished products; collect data to analyze the use and functioning of the transport system; prepare reporting documentation; <b>Have skills:</b> build models of professional tasks and interpret the results obtained, adapt to external conditions and implement standard technological transport processes, as well as develop and implement new types of transport services; use of information processing and analysis tools; working with technical documentation; analyzing the operation of stations; operational management of the station; train traffic control and shunting work; <b>Be competent:</b> in the analysis and assessment of the implementation of professional tasks and meaningful interpretation of the results obtained, when solving specific scientific and technical problems and production and economic tasks in the field of organization of transportation, movement and operations of transport.
RO 05 Professionally oriented module	RM 2209 Applied Mechanics	DB/V K	Exam	4	6	<b>Know:</b> main types of mechanisms and methods of their calculation and design; <b>Be able to:</b> select design schemes, carry out calculations for strength, rigidity and stability elements of machines and structures; <b>Have skills:</b> about the general laws of motion and equilibrium of bodies and the interactions that arise during this; about the fundamentals of mechanics of materials; on general methods of research and design of mechanical elements that are an integral part of machines, equipment and devices; <b>Be competent:</b> in methods of research and design of mechanical elements that are an integral part of machines, equipment and devices; in the basics of calculating parts and assemblies cars Technologies for optimizing management in the transport complex.
	OKT 1210 General transport course	DB/V K	Exam	2	6	<b>Know:</b> the foundations of your future profession and the formation of a holistic idea of transport those, its place and role in the national economy and in the unified transport system; dignity and disadvantages of various types of transport; assess the current state of the transport system. <b>Be able to:</b> understand the technical policy for further development of transport; make a choice types of transport and vehicles; predict the development of modes of transport; <b>Have skills:</b> on the selection and operation of various modes of transport, their interaction in within the framework of the functioning of the unified transport system of the republic, ensuring the safety of the transportation process in transport, knowing the principles and areas of application of intelligent control systems for various types of transport; <b>Be competent:</b> in the use of information technology to optimize management in the transport complex.

	PTEBT 3211 Rules for technical operation and transport safety	DB/V K	Exam	5	5	<p><b>Know:</b>procedure for qualifying permitted violations safety of train traffic and shunting work, its current state; reasons causing violations of train traffic safety, requirements and standards of technical regulations, instructions and other documents on the design, maintenance and operation of railway technical equipment;</p> <p><b>Be able to:</b>use traffic safety requirements and standards in production work;when developing new and reconstructed railway transport facilities and technological processes of railway departments, to foresee the consequences of traffic safety violations in case of failure to comply with rules and regulations;</p> <p><b>Have skills:</b>carrying out analysis, assessing the state of safety of train traffic and maneuvering new work; classification of permitted traffic safety violations, requirements and standards of technical regulations;</p> <p><b>Be competent:</b>in the course of an official investigation and organization of measures to ensure the safety of the transportation process using innovative and intelligent systems.</p>
	IG 1212 Engineering graphic arts	DB/V K	Exam	1	5	<p><b>Know:</b>the basis of descriptive geometry; laws of formation of flat and spatial forms, methods of constructing their images; basic requirements of ESKD (Unified System of Design Documentation);</p> <p><b>Be able to:</b>mentally imagine the shape, size and position of an object in space; determine the geometric shapes of parts; solve metric and positional problems to draw up a projection drawing; create graphic images of objects; use technical means when making drawings;</p> <p><b>Have skills:</b>reading and completing product drawings; use of information and reference materials and sources; perception of design documentation as a production document;</p> <p><b>Be competent:</b>in the development of design documentation for the design of technical objects; in the application of the fundamentals of engineering graphics.</p>
<b>HF – Component of choice</b>						
Baz 06 Basic Module	EOE 2213 Electrical engineering and basics electronics	BD/HF	Exam	3	5	<p><b>EOE 2213 Electrical and Electronics Engineering</b></p> <p><b>Know:</b>basic laws of theoretical electrical engineering, methods of calculation and experimental study of phenomena and processes in electrical and magnetic circuits and fields;</p> <p><b>Be able to:</b>draw up and read electrical diagrams, analyze operating modes and characteristics of electromagnetic devices; calculate parameters of electrical measuring circuits;</p> <p><b>Have skills:</b>on assembling real electrical circuits, modeling them with equivalent equivalent circuits and calculating the latter, including using a computer;</p> <p><b>Be competent:</b>in qualitative and quantitative relationships in electrical and magnetic circuits and the main ways to solve problems posed by special electrical engineering disciplines.</p> <p><b>// OES 2213 Fundamentals of Electrical Systems</b></p> <p><b>Know:</b>basic theories of electrical circuits of direct, alternating and three-phase currents; fundamentals of the theory of magnetic circuits; device and principle of operation of the transformer and</p>
	// OES 2213 Basics electrical systems					

						<p>electrical machines;</p> <p><b>Be able to:</b> apply the basic laws and relationships of electrical circuits of direct, alternating and three-phase currents for their analysis and calculation; read electrical diagrams and understand the purpose of the main components of electrical equipment; measure basic electrical quantities;</p> <p><b>Have skills:</b> about measuring systems; about the basic principles of building electronic circuits on semiconductor devices;</p> <p><b>Be competent:</b> in the development of electronic circuits, methods for their calculation and practical application, as well as in the design and understanding of the purpose of the main components of electrical equipment.</p>
MSUK 2214 Metrology, standardization and control quality	BD/HF	Exam	3	5	<p><b>MSUK 2214 Metrology, Standardization and Quality Management</b></p> <p><b>Know:</b> main goals, functions and principles of technical regulation; methods and means of measurement and control; basic concepts of geometric interchangeability;</p> <p><b>Be able to:</b> apply terminology in the field of technical regulation, assign standards for accuracy and fit of connections, taking into account specific operating conditions and recommendations of state standards;</p> <p><b>Have skills:</b> apply the acquired knowledge in ensuring and controlling the quality of objects of technical regulation;</p> <p><b>Be competent:</b> in matters of ensuring accuracy in the manufacture of machines; ensuring and quality control of technical regulation objects, control of the suitability of linear dimensions of parts.</p> <p>// SSTI 2214 Standardization, certification and technical measurements</p> <p><b>Know:</b> methods for ensuring interchangeability and its methodological fundamentals in relation to modern products of technological machines;</p> <p><b>Be able to:</b> apply knowledge of ESKD standards when performing course design.</p> <p><b>Have skills:</b> in the design, calculation and selection of accuracy standards based on the principles of ESDP; in the preparation and handling of technical and design documentation;</p> <p><b>Be competent:</b> in the design, calculation and selection of accuracy standards based on the principles ESDP; in the preparation and handling of technical and design documentation.</p>	
// SSTI 2214 Standardization, certification and technical measurements						
IG 2215 Engineering geodesy	BD/HF	Exam	3	5	<p><b>IG 2215 Engineering Geodesy</b></p> <p><b>Know:</b> general information about geodetic measurements, basic concepts of error theory, topographic maps and plans and their use in the design, reconstruction and restoration of structures; purpose and use of geodetic instruments; methods of geodetic measurements, calculations and assessment of the accuracy of their results; composition and technology of geodetic work performed at all stages of construction of objects for various purposes;</p> <p><b>Be able to:</b> use geodetic instruments; make geodetic measurements, calculations and assess the accuracy of their results; solve simple problems engineering geodesy, skillfully set specific tasks for geodetic support of surveys, design, construction and operation of buildings and structures for the relevant services;</p> <p><b>Have skills:</b> management methods geodetic measurements and processing of measurement results -</p>	



						<p>nia; performing angular, linear, height measurements to perform alignment work, executive surveys of construction and installation works, and also be able to use topographychemical materials for solving engineering problems;</p> <p><b>Be competent:</b>in the essence and significance of information in the development of the modern information society and acquire new knowledge, be aware of the dangers and threats that arise in this process, comply with the basic requirements of information security, including the protection of state secrets; in the ability to identify the natural scientific essence of problems arising in the course of professional activity, to attract the appropriate physical and mathematical apparatus to solve them; in possession of the basic laws of geometric formation, construction and mutual intersection of plane and space models necessary for making and reading drawings of buildings, structures, structures, drawing up design documentation and parts; in knowledge of the regulatory framework in the field of engineering surveys, principles of design of buildings, structures, engineering systems and equipment, planning and development of populated areas; in possession of engineering survey methods, technology for designing parts and structures in accordance with technical specifications using licensed applied calculation and graphic software packages.</p> <p><b>// PG 2215 Applied Geodesy</b></p> <p><b>Know:</b>principles and methods of topographic and geodetic work performed at various sites; design and creation of plan-elevation justification for large-scale survey; mathematical processing of the results of field and desk engineering and geodetic work; currently used geodetic instruments and equipment, computer hardware and software;</p> <p><b>Be able to:</b>use topographic and geodetic material, namely read maps, general plans, alignment drawings; carry out geodetic work during surveys, design, construction and installation of engineering structures and technological equipment; carry out executive shootings;</p> <p><b>Have skills:</b>when working with geodetic instruments; when performing angular, linear and altitude measurements on the ground; when performing calculation and graphic work when processing the results of geodetic measurements and solving engineering problems;</p> <p><b>Be competent:</b>in the production of a complex of topographic and geodetic, engineering and geodetic works during surveys, design and construction of buildings and structures.</p>
	//PG 2215 Applied geodesy					
OTP 07 Module Maintenance transport-process	ETS 3216 Unified Transportation system	BD/HF	Exam	5	5	<p><b>ETS 3216 Unified Transportation System</b></p> <p><b>Know:</b>rules of transportation by various modes of transport; methodology for calculating the cost of transportation; main types and parameters of rolling stock of various types of transport used in transportation; technical and operational characteristics of modes of transport; forms of interaction between different modes of transport; features of different types of transport in a unified transport system; in the use of digital technologies in various modes of transport;</p> <p><b>Be able to:</b>ensure rational use of production reserves and resources enterprises, as well as ways and prospects for their improvement as elements of a unified transport system; choose technical means that ensure interaction</p>

						<p>various types of transport; use advanced methods and forms of interaction between vehicles;  <b>Have skills:</b>carry out production and management activities in railway and industrial transport; organization of multimodal and intermodal transportation;  <b>Be competent:</b>in assessing production and non-production costs to ensure traffic safety, in organizing events to ensure the safety of the transportation process using innovative and intelligent systems.  <b>// OTEO 3216 Fundamentals of Freight Forwarding Services</b>  <b>Know:</b>fundamentals of transport and forwarding support of logistics chains for the distribution of cargo and goods, technology of operation of logistics systems; technology, organization and managementmanagement of direct and intermodal transportation;  <b>Be able to:</b>carry out professionally soundconsultations on the optimal choice of transport and technological schemes for cargo delivery, taking into account the wishes and requirements of shippers and consignees; analyze the situation and predict changes in the transport services market; carry out organizational and technological activities in railway and industrial transport;  <b>Have skills:</b>have an understanding of the various types of transport used for the transportation of goods and passengers, depending on the conditions, timing, labor intensity of transportation and other technical and operational indicators, the basic principles of organizing and managing the transportation process, work at freight forwarding enterprises; the current system of tariffs, discounts and benefits, including those applied; other enterprises;  <b>Be competent:</b>to be provided to shippersand consignees of services: for registration of transportation documents, delivery and receipt, import and export of goods; for loading, unloading and warehouse operations; on preparation of rolling stock; on cargo insurance, customs clearance of cargo and vehicles; for the provision of information and financial services.</p>
	// OTEO 3216 Basics transport- expeditionaryservi ce					
	TPPRR 3217 Technological processes of loading and unloading works and warehouse operations at transport	BD/HF	KR	5	5	<p><b>TPPRR 3217 Technological processes of loading and unloading and warehouse operationson transport</b>  <b>Know:</b>characterization and organization of loading and unloading operations and warehouse operations andtheir significance in the transportation process; have a good knowledge of modern loading and unloading machines, equipment and automation equipment;  <b>Be able to:</b>select materials for transport vehicles and equipment using informationtechnology, develop designs of machines and equipment taking into account technological, design, aesthetic, economic and other parameters;  <b>Have skills:</b>in planning warehouse operations; in production organizations loadingunloading and warehouse operations;  <b>Be competent:</b>in the basic methods of organizing the production process, allowing for safe operation of the transport system, in the development schemes for complex mechanization and automation of loading and unloading operations and warehousesoperations.</p>

	<p>// KMAGO 3217 Integrated mechanization and automation of freight operations</p>					<p><b>// KMAGO 3217 Integrated mechanization and automation of cargo operations</b>  <b>Know:</b>modern equipment, automation equipment and their technical and operational indicators; organization of loading and unloading operations and warehouse operations and their importance in transportation process;  <b>Be able to:</b>select materials for transport vehicles and equipment using information technology and have the skills to organize the operational maintenance of technical devices and structures in transport;  <b>Have skills:</b>realizeservice and operational activities in railway and industrial transport; in the development of schemes for complex mechanization and automation of loading and unloading operations and warehouse operations using specified means of mechanization and automation for a certain volume of cargo processing;  <b>Be competent:</b>in analyzing the effectiveness of using vehicle mechanisms and automated control systems in cargo systems.</p>
	<p>GTPP 4218 Freight tariffs and transport law</p>	<p>BD/HF</p>	<p>Exa- men</p>	<p>8</p>	<p>5</p>	<p><b>GTPP 4218 Freight Tariffs and Transportation Law</b>  <b>Know:</b>the basics of organizing tariffs for the transportation of goods by modes of transport, ways to optimize tariff policy;  <b>Be able to:</b>determine the factors influencing the transportation tariff; surcharges and fines included in the transportation tariff; carry out calculation and design activities on railway and industrial transport; determine transportation tariffs; calculation of technical and economic indicators of transport;  <b>Have skills:</b>in justifying and choosing the correct assessment of factors influencing the transportation tariff and the use of digital technologies in them, studying legal issues in transport transportation;  <b>Be competent:</b>in the field of effective application of various types of transport tariffs in various areas of its use.</p>
	<p>// TTPPP 4218 Transport technological processes industrial enterprises</p>					<p><b>// TTPPP 4218 Transport and technological processes of industrial enterprises</b>  <b>Know:</b>ideas about the role and place of transport in industrial production and its impact on the efficiency of industrial enterprises; principles of development of technological schemes of transport in various branches of industrial production, areas of application of various types of transport in production technological processes;  <b>Be able to:</b>carry out production and management activities in railway and industrial transport; calculate the main parameters of technological transport schemes, determine the technical and economic indicators of various types of vehicles;  <b>Have skills:</b>their applicability in certain production processes and the use of digital technologies in technological schemes; optimization of technological schemes of transport in technological production processes, determination of the most effective technological schemes of transport in industry;  <b>Be competent:</b>in the areas of applicability of various means of transport in technological production processes, taking into account the operating features and requirements of production processes.</p>

PTP 08 Module Preparation transport process	UEP 2219 Device and track operation	BD/HF	Exa- men	4	6	<p><b>UEP 2219 Track Construction and Operation</b></p> <p><b>Know:</b> maintenance and repair of railway tracks, main directions of scientific and technical progress in the field of design, development and improvement of track facilities, digital technologies in flaw detection;</p> <p><b>Be able to:</b> draw up and solve engineering problems related to structures and objects of railway transport tracks, use digital technologies in transport processes; justify the technical parameters of the track superstructure structures, taking into account the production and technical requirements for their operation; in the selection and justification of geometric and technical parameters of connections and intersections of tracks depending on their operating conditions;</p> <p><b>Have skills:</b> carry out calculation and design activities on railway and industrial transport; in drawing up and solving engineering problems related to structures and track objects;</p> <p><b>Be competent:</b> in the use of digital technologies in transport processes, in the construction of the upper structure of the track, roadbed, connections and intersections of tracks, on the standards for the design and maintenance of rail tracks and turnouts.</p> <p><b>// EPP 2219 Operation of access roads</b></p> <p><b>Know:</b> purpose and elements of the track superstructure; purpose and device of the turnout switch; general information about railway crossings; road barriers and signs, digital technologies in transport processes;</p> <p><b>Be able to:</b> count on the strength, stability, reliability of mechanisms and machines, equipment and structures during design and operation; determine the lengths of each curve with increasing steps for links; determine the layout of shortened rails; Have the skills: drawing up and solving engineering problems related to access roads of industrial enterprises, using digital technologies in transport processes; calculating the width of the rail track and the elevation of the outer rail; calculation of an ordinary single turnout; determining the duration of the window for performing technological operations;</p> <p><b>Be competent:</b> in the basics of track management, basic types of track repairs, resource-saving technologies for track maintenance; on the organization and technology of major capital track work, the use of digital technologies in transport processes.</p>
	//EPP 2219 Operation of access roads					
	OGKR 4220 Organization of cargo and commercial work	BD/HF	Exa m	7	5	<p><b>OGKR 4220 Organization of cargo and commercial work</b></p> <p><b>Know:</b> rules for the transportation of goods, rules for the transportation of oversized and dangerous goods, have knowledge in the field of organizing car flows from loading points, implementing measures to ensure the safety of train traffic, the safety of transported goods and environmental protection during the transportation of various goods; methods for calculating the technical equipment of interaction points; methods for selecting transport and technological systems for cargo delivery;</p> <p><b>Be able to:</b> provide registration service transportation of passengers and cargo luggage by rail using information technologies; organize the implementation</p>

						<p>carrying out packaging work, labeling, loading, unloading, sorting, import and export of goods; organize the work of cargo reception and delivery points; use the theoretical foundations of the discipline in production conditions; analyze and calculate the capacity of elements of the transport system; justify modes of interaction between modes of transport; choose transport and technological schemes for cargo delivery;</p> <p><b>Have skills:</b> organizing the work of the enterprise to carry out cargo and commercial operations and cargo transportation technology, the best use of cars in terms of time, carrying capacity and cargo safety, the use of advanced technology and modern computer technology; selection of modes of transport and rational distribution of resources between interacting modes of transport;</p> <p><b>Be competent:</b> in matters related to the technology of cargo and commercial operations; in the technology of transportation of various types of cargo in international communications; in matters of improving cargo and commercial work in transport using electronic document management.</p> <p><b>// PPGPT 4220 Rules for the transportation of goods in industrial transport</b></p> <p><b>Know:</b> specific properties and volumetric-mass characteristics of cargo, as well as the principles of their placement and securing on railway rolling stock and the study of technical conditions for placement and securing of cargo, the procedure and conditions for the transportation of liquid cargo, dangerous goods; the influence of transport characteristics of the main range of goods on the organization of their transportation;</p> <p><b>Be able to:</b> renders services for registration of transportation of industrial goods using information services; organize and adjust the implementation of operational work plans for loading, unloading, importing and exporting cargo; use the acquired theoretical knowledge when: choosing the type of transport, types of rolling stock, loading and unloading machines and devices, packaging means, transportation and storage modes, preparing transportation documents and unsecured transportation, conducting examinations; Have the skills: an understanding of the impact of unsafe transportation, the negative properties of cargo on the environment; trends in improving containers and cargo packaging; new specialized vehicles; warehouses and loading and unloading equipment; Be competent: in the general principles of the functioning of transport and logistics systems; in regulatory documents regulating transport activities in the Republic of Kazakhstan and internationally message, in application of digital technologies in various forms transport.</p>
	// PPGPT 4220 Rules for the carriage of goods on industrial transport					
	UER 3221 Control operational work	BD/HF	Exam	5	5	<p><b>UER 3221 Operations Management</b></p> <p><b>Know:</b> on the basic principles of managing the operational work of railway stations and hubs in modern conditions; principles of constructing a train schedule; theories for optimizing production processes of railway stations and hubs; systems for organizing car flows on the railway network, taking into account the optimization of tasks when drawing up a train formation plan;</p> <p><b>Be able to:</b> organize measures to ensure the safety of the transportation process using innovative and intelligent systems; make decisions on service implementation of the transportation process, taking into account the efficient use of rolling stock</p>

	<p>// ORSDU 3221 Organization work railwaystations and dispatchermanage- ment</p>					<p>based on an analysis of the activities of departments; work with the necessary programs, apply application programs when developing train schedules and calculating standards;  <b>Have skills:</b>in drawing up train schedules; daily train schedule;  <b>Be competent:</b>in modern systems and technical means of railway transport control; industrial transport systems and station location.  <b>// ORSDU 3221 Organization of work of railway stations and dispatch control</b>  <b>Know:</b>organizing the work of the dispatch apparatus of the operational and administrative department of the department and stations to implement the daily shift plan; control over the execution of the department's dispatch staff of functional duties and individual tasks of the department's management; fulfillment of the established volume of transportation and efficient use of rolling stock of technical equipment;  <b>Be able to:</b>conduct operational planning of train and freight work of the department, railway stations, nodes and sections based on the actual implementation of the shift-daily work plan and information on the approach of trains and locomotives from neighboring departments and from connecting points of the railways of neighboring countries;  <b>Have skills:</b>in the application of daily and shift plans for train and freight work, in accordance with the technical plan; in drawing up reports on the implementation of operational indicators with an analysis of the reasons for non-fulfillment (decade, month, quarter, year); summarize traction and loading resources  <b>Be competent:</b> in determining the optimization of the use of railway infrastructure capacity; in the study, behavior and in accordance with the traffic schedule and plan for the formation of trains on public railway transport, in the use of digital technologies in various modes of transport.</p>
	<p>TURSU 3222 Technology managemen t workstations and nodes</p> <p>//OMPRPT 3222 Organization of shunting and</p>	BD/HF	KR	6	5	<p><b>TURSU 3222 Technology for controlling the operation of the station and units</b>  <b>Know:</b>basic principles for managing the operation of railway stations and hubs, the fundamentals of technology, a system of quantitative and qualitative performance indicators in the context of the transition to a new technology for operational transportation management;  <b>Be able to:</b>carry out planning and implementation of projects in railway and industrial transport; know the principles of their operation, industrial transport systems and station location;  <b>Have skills:</b>use the theoretical foundations of the discipline being studied in production conditions and the theory for optimizing production processes of railway stations and hubs;  <b>Be competent:</b>in the selection of technical means for processing car flows at stations and on layover tracks.  <b>// OMPRPT 3222 Organization of shunting and train work on industrial transport</b>  <b>Know:</b>standardization of shunting work in industrial railway transport;</p>

	train work on industrial transport					forecasting work according to requests from shippers, freight work of the railway department for the next day, analysis and adjustment of the enterprises' plan for occupying empty rolling stock for loading; <b>Be able to:</b> draw up reports on the distribution of wagons in order of priority for unloading; organize the work of the dispatch apparatus of the operational management department of the department and stations to implement the daily shift plan; <b>Have skills:</b> analyze the use of working fleet cars at the enterprise, develop basic technological processes for processing trains of various categories; <b>Be competent:</b> in organizing the transportation process on industrial transport with the calculation of quantitative and qualitative standards for shunting and train work; in planning daily and shift work of transport of an industrial enterprise.
<b>PD - Major disciplines</b>						
<b>VK-University component</b>						
ONTS 09 Module Ensuring vehicle reliability	SUDP 4301 Train control system	PD/VC	KR	7	6	<b>SUDP 4301 Train Control System</b> <b>Know:</b> on methods and means of dispatch control of train traffic, management and regulation of this process; regulatory documents regulating the operation of the station; principles of managing the operational work of railways in the use of intelligent systemstrain driving systems; <b>Be able to:</b> carry out production and management activities in railway and industrial transport; create advanced technology for the operation of railway stations,other railway departments using advanced methods of production workers, use the theoretical foundations of the discipline being studied in a production environment; <b>Have skills:</b> in techniques and methods of dispatch control of train traffic; knowbasic principles and areas of application of intelligent train control systems; selection of technical means for processing car flows at stations and on layover tracks; <b>Be competent:</b> in the use of programs for developing train schedules and calculating standards; standardization of operational performance indicators of railway transport and adjacent enterprises; in the use of intelligent train driving systems that ensure the efficiency of railway transport.
	PP2 3302 Productionpractice 2	PD/VC	Exam , Repor t	6	5	<b>Know:</b> theoretical knowledge acquired by students at the university while studying special disciplines, acquisition of practical skills in organizing cargo and commercial work of stations, activities aimed at ensuring traffic safety, organization and labor protection at enterprises; <b>Be able to:</b> developmeasures to ensure safety in various conditions and at various stages of the transport process; ability to control the quality of technological processes, materials and finished products; build models of professional tasks and interpret the results obtained, adapt to external conditions and implement standard technological transport processes, as well as develop and implement new types of transport services; <b>Have skills:</b> analyze and optimize the operation of the transport system at all levels,apply the acquired knowledge when solving specific scientific, technical and

						production and economic tasks in the field of organizing transportation, movement and operation of transport and format the results accordingly for writing a report; <b>Be competent:</b> in the analysis and assessment of the performance of professional tasks and meaningful interpretation of the results obtained; in collecting factual material on the professional activities of a railway station or industrial enterprise.
	OPUD 2303 Organization of transportatio n and traffic management	PD/VC	Exam	4	6	<b>OPUD 2303 Organization of transportation and traffic control</b> <b>Know:</b> on organization and management of various modes of transport; on international passenger transport; on the operation of railway stations, on the use of intelligent traffic control systems in railway transport; theoretical basis for determining the throughput and carrying capacity of transport networks and facilities; intelligent train traffic control systems; <b>Be able to:</b> solve issues of the development of its technical means both in the conditions of current operation and for the near and long term; use the theoretical foundations of the discipline being studied in a production environment; in operational conditions, make decisions on servicing the transportation process; perform technical and economic calculations for activities, work efficiency; <b>Have skills:</b> provide an optimal system for managing cargo flows, based on logistics principles and research of transport operations, resolve issues of the transportation process; in order to fully satisfy transportation requests; conducting an analysis of ongoing work in transport, drawing conclusions and proposals from this in order to improve the operation of transport facilities; <b>Be competent:</b> in the field of methods of organizing the transportation process based on principles of its optimization; in the application of modern management methods using IT technologies; in the application of intelligent train traffic control systems.
OTIA 10 Module Occupational safety and final certification	OT 4304 Occupational Safety and Health	PD/VC	Exa- men	7	5	<b>Know:</b> legislative acts and main provisions of the Constitution of the Republic of Kazakhstan in the field of securitylife and labor protection, rights and obligations of the employee and employer in the field of labor protection, types and causes of industrial injuries and occupational diseases, dangerous and harmful production factors and methods of combating them, personal and collective protective equipment, electrical and fire safety requirements; <b>Be able to:</b> monitor compliancelabor protection rules, electrical and fire safety; use collective and individual protective equipment, as well as fire extinguishing equipment; <b>Have skills:</b> the use of individual and collective protective equipment, provision of pre-medical care to victims; work with legal acts included in labor protection legislation; effective use of knowledge and skills in the field of labor protection and safety; <b>Be competent:</b> in matters of the legislative, regulatory framework in the field of protectionlabor and safety.
	PID 4305 Design- research	PD/VC	KR	8	5	<b>Know:</b> planning the transportation process on all types of transport and implementing the design and research activities on the organization of transportation, traffic and operation of transport, study the principles of managing the operational work of railways and project



	activity					<p>industrial enterprises.</p> <p>Be able to: work with legislative acts and technical standards in force in transport, as well as research resources; the procedure for submitting and defending a thesis; process the results of research into railway operational management; document the results of the experiment/research; formulate design solutions to research problems; analyze the state of transport provision of cities and regions; predict the development of regional and interregional transport systems;</p> <p><b>Have skills:</b>in planning research activities and implementing organization and implementation of design and research activities; in the processing and presentation of research results; formation of a solution to a design and research problem; presenting research results for public protection; management of operational work of railways.</p> <p><b>Be competent:</b>in matters of legislative acts and technical standards, labor protection and safety in the field of use of railway and industrialtransport.</p>
	PP 4306 Pre- diplomapractice	PD/VC	Exam , Repor t	8	5	<p><b>Know:</b>methods of organizing and controlling train traffic and vehicle safety,application of acquired knowledge and practical skills when performing diploma design and professional activities; main production tasks of a transport enterprise; job responsibilities of engineering and technical workers of the enterprise; diploma design is carried out in accordance with the requirements of the standard rules for the activities of organizations implementing educational programs of higher professional education;</p> <p><b>Be able to:</b>collect data to analyze the use and functioning of the transport system; prepare reporting documentation; receive source materials for the development of the thesis (project), the main technical solutions of the thesis agreed with the enterprisework (project);</p> <p><b>Have skills:</b>use of information processing and analysis tools;working with technical documentation;</p> <p><b>Be competent:</b>in the analysis and assessment of the implementation of professional tasks and meaningfulinterpretation of the obtained results.</p>
	IA 4307 final examinatio n	PD/VC	Defense of the thesis (project) or passing a compre hensive exam	8	8	<p><b>Know:</b>main objects, phenomena and processes related to the organization of traffic in transport and be able to use scientific research methods; complex methods for modeling and designing vehicle movement; regulatory documents regulating the operation of the station; technical means at the station; principles of railway operational management;</p> <p><b>Be able to:</b> evaluate data from the analysis of wear mechanisms, corrosion, loss of structural strength; apply legislative acts and technical standards in force in transport, including traffic safety, working conditions, environmental issues; take into account the socio-psychological foundations of team management; determine parameters for optimizing logistics transport networks; use modern information technologies as a tool for optimizing management processes in the transport complex;</p>

						<p>develop models of promising logistics processes of transport enterprises, perform optimization calculations of basic logistics processes;</p> <p><b>Have skills:</b>independent development of new production technologies; determining operating costs, product costs, profits; carrying out a decomposition of the goals of the system (enterprise, organization, workshop, site) and choosing effective methods and technologies for achieving goals; analysis of the state of transport provision of cities and regions, forecasting the development of regional and interregional transport systems; skills of working as part of a team of performers, monitoring and managing traffic organization;</p> <p><b>Be competent:</b>in the field of organization and management of vehicles; V design, selection and rational modes of operation of transport facilities and systems; in the field of labor legislation.</p>
<b>HF – Component of choice</b>						
POrg 11 Module Professional and organization al	PSPT 3308 Mobiletrain composition and traction	PD/HF	Exam	6	5	<p><b>PSPT 3308 Rolling stock and train traction</b></p> <p><b>Know:</b>ideas about the rolling stock of railway transport; main types and design of traction and carriage rolling stock of railway transport; theoretical foundations of train traction; main directions for improving the design of rolling stock; digital technologies to ensure optimal train movement;</p> <p><b>Be able to:</b>carry out traction calculations to determine the speed and time of train movement; solve braking problems;</p> <p><b>Have skills:</b>in the field of using various types of rolling stock and performing traction calculations; organizing work on designing methods for managing transport and intelligent systems;</p> <p><b>Be competent:</b>in the field of design and technical characteristics of mobile composition of railway transport and methods of traction calculations.</p> <p><b>//OTTS3308 Fundamentals of transport and technical means</b></p> <p><b>Know:</b>about the role of railway transport in industrial production, the design features of rolling stock and the technology of using railway transport in industry production;</p> <p><b>Be able to:</b>choose technical means of industrial railway transport for various industries, perform technical and traction calculations of industrial railway transport; organize the operation of vehicles and intelligent systems;</p> <p><b>Have skills:</b>in the field of application of railway transport in industrial production and traction calculations; know the principles and areas of application of intelligent locomotive control systems; calculation of specific braking forces, locomotive fleet of industrial enterprises;</p> <p><b>Be competent:</b>in the areas of applicability of railway rolling stock in various industries and methods of traction calculations using new programs.</p>
	//OTTS 3308 Basics transport and technical funds					

<p>OPZhS 3309 Basics railway station design</p>	<p>PD/HF</p>	<p>KR</p>	<p>5</p>	<p>5</p>	<p><b>OPZhS 3309 Fundamentals of railway station design</b>  <b>Know:</b>structure, general principles of maintenance and repair of railway tracks, requirements for the design and construction of railway stations and nodes, methods for calculating throughput and processing capacity;  <b>Be able to:</b>analyze station diagrams of all types, select the most optimal options for placing station devices; analyze station automated systems for the reception, departure and dismissal of trains for shunting work;  <b>Have skills:</b>carry out calculation and design activities on railway and industrial transport; on organizing the work of personnel for technological maintenance of the transportation process;  <b>Be competent:</b>in ensuring traffic safety and solving professional problems through the use of regulatory documents.  <b>// OPTUS 3309 Fundamentals of the design of transport devices and structures</b>  <b>Know:</b>design of subgrade in transverse and longitudinal profile; comprehensive design of basic schemes and structures of individual elements of stations and design of highway intersections; relative arrangement of devices and methods for their calculation with use of computer technology;  <b>Be able to:</b>develop technological processes for designed and reconstructed transport devices and structures; develop and compile longitudinal and transverse profiles of roads.  <b>Have skills:</b>carry out planning and implementation of projects in railway and industrial transport; development and drawing up diagrams of railway and transport hubs; performing technical and economic calculations;  <b>Be competent:</b>in general plans of stations; in the development and placement of railway and road facilities; in choosing the optimal options for compared devices and structures.</p>
<p>// OPTUS 3309 Basics design transport devices and structures</p>					
<p>UPP 3310 Control passenger transp ortation</p>	<p>PD/HF</p>	<p>Exam</p>	<p>6</p>	<p>5</p>	<p><b>UPP 3310 Passenger Transportation Management</b>  <b>Know:</b>on the organization of train traffic, management and regulation of this process, technological and economic indicators of passenger transportation; technology of operation of passenger stations;  <b>Be able to:</b>carry out service and operational activities in railway and industrial transport; develop work schedules for passenger, passenger technical stations and train stations; calculate the plan for the formation of passenger trains; perform calculations to determine the power of the main devices of stations, passenger technical stations; calculate basic technical and economic indicators;  <b>Have skills:</b>in the field of passenger transportation management; correct organization of passenger transportation;  <b>Be competent:</b>in methods and methods of management and planning on the railway transport;  <b>// SVPT 3310 Special types of industrial transport</b>  <b>Know:</b>principles of operation, properties, technical characteristics, design features</p>
<p>//SVPT 3310 Special</p>					

	types of industrial transport					<p>special types of industrial transport;</p> <p><b>Be able to:</b>provide services for registration of transportation of industrial goods using information services;carry out work on the design of special types of industrial transport; evaluate the influence of the parameters of individual elements on the performance of machines as a whole and, on this basis, make the optimal selection of elements; evaluate machine reliability indicators based on operational observation data;</p> <p><b>Have skills:</b>carry out service and operational activities in railway and industrial transport;working with application programs for calculating the parameters of transport vehicles;</p> <p><b>Be competent:</b>in matters of operation, design and repair of special types of industrial transport, railway design.</p>
ASS 12 Module Automation of communication systems	IPZhD 4311 Survey and design of railways	PD/HF	KR	7	6	<p><b>IPZhD 4311 Survey and design of railways</b></p> <p><b>Know:</b>design and calculation methods for new and reconstructed railways;methods for routing and designing railways and forces acting on the train;</p> <p><b>Be able to:</b>develop design documentation for the design of technical objects; determine the capacity of the railway; carry out traction calculations of the specific forces of the main resistance to movement of the locomotive and rolling stock; construct diagrams of specific resultant forces; determine the values of the dependencies of the speed and travel time of the rolling stock, taking into account the terrain;</p> <p><b>Have skills:</b> choosing a direction when tracing railways; comparison of options; Be competent: in types of engineering surveys; technical and economic characteristics and the main stages of design; railway transportation processes; in the design stages and composition of the project.</p> <p><b>// OPPZhD 4311 Fundamentals of industrial railway design</b></p> <p><b>Know:</b>methods for calculating access roads;complex design of basic circuits and structures of individual elements of stations, relative arrangement of devices and methods of their calculation using computer technology; problems of development of transport hubs; Be able to: carry out calculation and design activities on railway and industrial transport; design the profile of industrial railways;</p> <p><b>Have skills:</b>work related to the development and compilation of sidings, passing points, stations, airfields and airports and other objects - large-scale overlay of the main elements of designed and reconstructed objects; construct a plan and profile of the railway route; straightening elements and calculating the main parameters of curved sections of track;</p> <p><b>Be competent:</b>when designing devices for locomotive and carriage facilities on stations.</p>
	// OPPZhD 4311 Basics design industrial railways					
	ITOP 43120 Innovative technology in the organization transportation	PD/HF	Exam	7	5	<p><b>ITOP 4312 Innovative technologies in transportation organization</b></p> <p><b>Know:</b>about the automated railway transport management system, the composition of subsystems and their functional purpose; intelligent innovative technologies in transport;</p> <p><b>Be able to:</b>carry out development and make decisions for different types of planning and</p>

						<p>determining optimal solutions to change information flows in transport; develop algorithms for new tasks of subsystems related to the management of freight and passenger transportation; develop unified forms of input and output documents, arrays of normative and reference information for tasks prepared for inclusion in the automated control system;</p> <p><b>Have skills:</b> acquire skills to work at automated workplaces for workers railway transport; on innovative technologies of the transportation process, on the use of intelligent innovative technologies in railway transport;</p> <p><b>Be competent:</b> in matters of innovative technologies in the organization of transportation.</p> <p>// ASUPT 4312 Automated control systems for industrial transport</p> <p><b>Know:</b> transport automation equipment, loading and unloading processes and document flow at industrial enterprises; telecommunications in the organization of transport services; purpose and types of communication systems and means in industrial transport; ACS for industrial transport;</p> <p><b>Be able to:</b> carry out organizational and technological activities in railway and industrial transport; manage automation systems, control task completion and schedules; use of modern electrical means in work to process operational information;</p> <p><b>Have skills:</b> work with automated control systems in mainline transport, on the use of intelligent automated systems in industrial transport; performing operations to implement the transportation process using modern information technologies for transportation management; draw up documents regulating the organization of the transportation process;</p> <p><b>Be competent:</b> in organizing the work of personnel to meet transportation safety requirements and select optimal solutions when working in non-standard and emergency PC situations.</p>
	//ASUPT 4312 Automated-nal systems industrial transport management					
	ATS 4313 Automation, telemechanics and communication	PD/HF	Exam	8	5	<p><b>ATS 4313 Automation, Remote Control and Communications</b></p> <p><b>Know:</b> methods and means of controlling transportation processes, train movement on railway transport using modern automation, telemechanics and communications devices, as well as advanced technologies that ensure savings in labor and energy resources, traffic safety in various operating conditions;</p> <p><b>Be able to:</b> carry out service and operational activities in railway and industrial transport; use railway automation, telemechanics and communication devices when organizing the transportation process based on a detailed study of existing signaling, centralization and blocking schemes; assemble a circuit and connect the relay to the network (DC, AC);</p> <p><b>Have skills:</b> transportation management process using intelligent systems of railway automation, telemechanics, communications while ensuring traffic safety and labor protection; on installation and configuration of PBX devices; on technical calculation of systems;</p> <p><b>Be competent:</b> in methods and means of managing the transportation process with</p>

						<p>using railway automation systems, telemechanics, communications while ensuring traffic safety and labor protection.</p> <p><b>// SCBS 4313 Signaling, centralization, interlocking and communication</b></p> <p><b>Know:</b> on the operation of devices ensuring traffic safety using innovative and intelligent systems; fundamentals of the design and operating principle of signaling equipment, measured parameters, maintenance technology; installation of automation and telemechanics systems at stations and stages, schemes for measuring basic parameters, repair technology;</p> <p><b>Be able to:</b> ensure the safety of the transportation process in transport; read electrical diagrams and drawings of signaling devices, perform installation work on elements and mechanisms of signaling devices; perform technical diagnostics of devices;</p> <p><b>Have skills:</b> perform work in the field of intelligent alarm systems, centralization, blocking and communication; on performing adjustments to the mechanical parts of signaling devices according to operational and technical documentation;</p> <p><b>Be competent:</b> in the maintenance of signaling devices, identify and eliminate the causes of malfunctions features of signaling devices.</p>
	// SCBS 4313 Alarm, centralization, blocking and connection					

**4. Summary table reflecting the volume of disbursed credits by modules of the educational program:**

Course of Study	Semester	Number of modules to be mastered	Number of disciplines studied			Amount of credits										Quantity	
			OK	VC	HF	Theoretical training	Educational practice	Educational practice	Psychological and pedagogical practice	Teaching practice	Internship	Undergraduate practice	final examination	Total	Just in hours	Exam	Diff. test (KP, KR)
1	1	4	3	3	-	27								27	810	5	1
	2		5	2	-	33	5							33	990	6	1
2	3	8	2	1	3	26								26	780	5	1
	4		3	5	1	44				5				44	1320	8	1
3	5	7	-	2	4	thirty								thirty	900	4	2
	6		-	4	3	35				5				35	1050	6	1
4	7	6	-	2	3	27								27	810	3	2
	8		-	4	2	33						5	8	33	990	5	1
<b>Total:</b>		<b>13</b>	<b>13</b>	<b>23</b>	<b>16</b>	<b>255</b>	<b>5</b>				<b>10</b>	<b>5</b>	<b>8</b>	<b>255</b>	<b>7650</b>	<b>42</b>	<b>10</b>

## 1 DEVELOPED

Compiled by:

Askarov B.Sh. Head of the Department of PT; Kenzhekeeva A.R. Art. teacher of the department of PT

## 2 DISCUSSED

2.1 At a meeting of the PT department

Protocol from " \_\_\_\_\_ » \_\_\_\_\_ 2023, no. \_\_\_\_\_  
Head of the department \_\_\_\_\_ Askarov B.Sh.

2.2 At a meeting of the TDF Quality Assurance Committee

Protocol from " \_\_\_\_\_ » \_\_\_\_\_ 2023, no. \_\_\_\_\_

Chairman \_\_\_\_\_ Abaeva N.F.