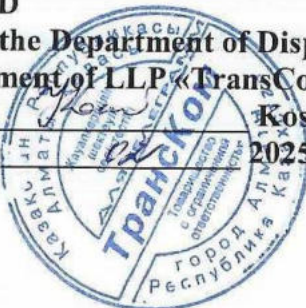


AGREED

Head of the Department of Dispatching Transportation
Management of LLP «TransCom»

Kosybaev K.K.

« 19 » 2025 y.



APPROVED



CATALOG OF DISCIPLINES OF THE COMPONENT BY CHOICE

EDUCATIONAL PROGRAM

6B07174- Intelligent technologies for transport processes

Level of training: Bachelor

Period of study: 3 years

Year of admission: 2025 y.

Module	Cycle	Component	Total labor intensity	Total labor intensity		Semester	Learning outcome	Brief description of the discipline	Prerequisites	Post-requisites
				in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10	11
M5 - Life skills module	BD	EC	Fundamentals of financial literacy	150	5	6	LO4	The discipline is aimed at developing the ability to make informed financial decisions, plan income and expenditures, assess risks and effectively manage their resources in a market economy. It studies the basic knowledge in the sphere of finance and rational management of monetary resources, the concepts of financial system, budget, banking products, crediting, savings, investments, insurance, taxation and protection against financial fraud are considered	Transportation management	Managerial Economics, Time-management, Minor program 1
			Basics of law and anti-corruption culture				LO1	The discipline outlines the fundamental concepts of law, the constitutional structure of the state power of the Republic of Kazakhstan, the rights and freedoms of citizens enshrined in the Constitution, the mechanism and protection of legitimate human interests in case of their violation. The discipline forms students' improvement of public and individual legal awareness and legal culture, as well as a system of knowledge and citizenship on combating corruption as an antisocial phenomenon. Methods of active learning - analysis of specific situations, brainstorming.	Sociology, Political Science	Management of operational work in transport, Time - management
			Green economy and sustainable entrepreneurship				LO7	The discipline «Green economy and sustainable entrepreneurship» is devoted to the study of environmentally oriented economic models and business strategies aimed at sustainable development. The course examines the concepts of the green economy, ESG (Environmental, Social, Governance) approaches, circular economy, sustainable business models and their impact on global markets	Innovative technologies for railway stations and hubs, Transport Management	Managerial Economics, Time-management, Minor program 1

			Digital inclusion				LO1	The discipline «Digital inclusion» is devoted to the study of the principles of ensuring equal access to digital technologies and information for all social groups, including people with disabilities. The course examines barriers to digital inequality, strategies for overcoming them, technologies for adapting the digital environment, and government initiatives to develop an inclusive digital society	Python programming basics, Information and Communication Technologies, Intelligent technologies for the operation of a transport hub	Intelligent technologies in organizing car and passenger traffic, Automation of Logistics Processes (RFID, IoT, Sensor Networks), Minor program 3
			Environmentally sustainable technologies				LO4	The discipline «Environmentally sustainable technologies» studies modern methods and innovative solutions aimed at minimizing the negative impact of human activities on the environment. The course examines the principles of sustainable development, energy-saving technologies, renewable energy sources, waste management strategies, and environmentally sound production processes	Intelligent technologies for the operation of a transport hub	Occupational Safety and Health
M7 - Professional module	BD	EC	Modern railway rolling stock	150	5	2	LO6	The discipline is aimed at the formation of professional competencies in the field of technical solutions to improve, modern industrial and environmental trends associated with an effective method of eliminating problems in the operation and maintenance of railway transport. Studies the device of modern locomotives and cars, the design of modern unmanned trains of Kazakhstan and foreign countries, the design and prospects of development of unmanned transportation systems	Theoretical mechanics, Innovative technologies for the operation of railway stations and junctions	Innovative technologies for the operation of railway sections and directions, Railway design and operation
			Intelligent motor vehicles				LO6	The discipline studies the main directions of the functioning of intelligent systems in transport; methods and technology of automated regulation of rolling stock flows; advanced technologies and scientific organizations for traffic management; methods, methods and means of operation of intelligent vehicles; unmanned vehicles, their device and operation; the use of software and hardware to ensure information security of telematics systems	Theoretical mechanics, Innovative activities of motor transport enterprises	Modeling and coordination of traffic on highways, Design and operation of highways
M7 - Professional module	BD	EC	Innovative technologies for the operation of railway sections and directions	180	6	3	LO8	The study of innovative technologies of the transportation process in railway transport based on domestic and foreign experience, consideration of integrated approaches in the organization of train traffic on railway sections and directions, taking into account the safety of train traffic, effective organization of car traffic, innovative systems for organizing train traffic and communications. Formation of skills for calculating the capacity of railway sections and the procedure for building a train schedule	Modern railway rolling stock, Rules of cargo transportation by rail	Intelligent technologies in the organization of carriage and passenger traffic
			Modeling and coordination of traffic on highways				LO8	Studying methods of traffic control of transport and pedestrian flows on road networks. Formation of skills in calculating traffic flow parameters (intensity, speed, density, composition, unevenness); determining the level of congestion in areas, characteristics of pedestrian movement; analysis of transport and operational indicators and interaction of vehicles on highways; modeling and coordination of traffic using innovative technologies, taking into account the impact on the environmental situation	Computer and engineering modeling, Intelligent motor vehicles, Rules for the transportation of goods by road transport	Intelligent technologies in traffic flow planning
M7 - Professional module	BD	EC	Rules of cargo transportation by rail	180	6	4	LO2 LO9	The study of the norms and rules necessary for the transportation of various goods by rail, the basic rules, principles of organization and conditions of cargo transportation, which form an important part of the transport process. Acquisition of skills in planning the transportation of goods by rail, registration and filling in an invoice and a set of transportation documents in national and international communications, drawing up an accounting card for the implementation of a cargo transportation plan,	Transportation management on transport	Innovative technologies for the operation of railway sections and directions

			Rules for the transportation of goods by road transport				LO9	Study of transport characteristics and rules for the transportation of various goods, their interaction with the environment, warehousing systems and ensuring the safety of goods during storage, transshipment and transportation, as well as requirements for containers, packaging materials, vehicles and loading/unloading mechanisms when transporting various types of cargo by road. Formation of skills in applying the norms and rules governing the transportation of various goods by road	Transportation management on transport	Modeling and coordination of traffic on highways
M7 - Professional module	BD	EC	Intelligent technologies in the organization of carriage and passenger traffic	210	7	8	LO9	The study of the principles of the organization of carriage and passenger flows, the formation of skills in the application of basic methods, methods and means of planning traffic flows to solve problems of optimizing the promotion of carriage and passenger flows, as well as the basics of developing plans for the formation of freight and passenger trains using intelligent technologies, in the context of the introduction of automated control systems for the operation of transport facilities with elements of artificial intelligence.	Innovative infrastructure of the passenger complex, Innovative technologies for the operation of railway sections and directions	Railway design and operation, Technical stations and railway junctions, Separate railway stations
			Intelligent technologies in traffic flow planning				LO9	Study of a complex of systems for the efficient operation of the transport network using information, transport and communication technologies for managing road infrastructure and vehicles. Formation of skills in collecting, processing, integrating and applying data in transport planning; performing the functions of dispatcher and operational control of traffic flows and coordinating their interaction using intelligent transport systems.	Innovative infrastructure of the passenger complex, Modeling and coordination of traffic on highways	Design and operation of highways, Designing transport facilities using Smart City technology, Intelligent technologies in the automotive and urban infrastructure
Professional module	BD	EC	Innovative technologies for the operation of railway stations and junctions	210	7	9	LO8	The study of the principles of the development of technological processes for the operation of railway stations and nodes, methods of managing train and shunting operations at stations, taking into account throughput and processing capabilities. Formation of skills in the organization and management of technological processes at the station, calculation of operational indicators and construction of a daily schedule of the station's operation using innovative technologies in safety conditions. Training equipment is used to practice the actions of the station's operational personnel	Theoretical mechanics	Modern railway rolling stock
			Innovative activities of motor transport enterprises				LO8	Studying the forms and methods of organizing innovative activities of road transport enterprises based on global trends. Formation of skills in developing technological processes for the operation of motor transport enterprises; analysis of transport provision of cities and regions, forecasting and planning for the development of transport systems; improving systems for organizing transportation and transport management, taking into account the capabilities of modern information technologies and intelligent transport systems	Theoretical mechanics	Intelligent motor vehicles
M7 - Professional module	BD	EC	Train traffic control systems	210	7	9	LO11	Studying the principles of construction and methods of analysis of railway train control systems and acquiring on this basis the necessary knowledge to improve the quality of management of the industry and, above all, its operational activities; the best use of fixed assets, material and labor resources; mastering the increasing volume of traffic; improving the technical and economic performance of the industry using management systems train traffic	Automation, telemechanics and communication in transport, Transportation management on transport	Modern technologies for cargo and commercial work management, Separate railway stations

M7 - Professional module		M9 - Module of economic and managerial competencies					
	PD		BD				
	EC		EC				
Design and operation of highways		Railway design and operation	Critical thinking	Fundamentals of financial literacy	Time - management	Managerial Economics	Traffic safety in road transport
150			90			90	
5			3			3	
3			4			7	
LO6		LO6	LO7	LO7	LO7	LO7	LO1
To choose technical solutions according to regulatory standards and safety rules in the design and construction of transport and urban infrastructure facilities using innovative technologies, taking into account climatic and engineering-geological conditions, principles of construction, operation and reconstruction of highways with modern machines and mechanisms and software for calculating the corresponding costs for the construction and further operation of highways..		To design railways of different categories with the definition of technical parameters for new and reconstruction of railway lines according to norms and economic, engineering and geological conditions, calculating the appropriate construction costs and rational timing of changes in design solutions, principles of their comparison using innovative technologies.		The discipline studies the forms and techniques of rational cognition, the creation of a general idea of logical methods and approaches used in the field of professional activity, the formation of practical skills of rational and effective thinking.		Formation of the conceptual apparatus and development of skills of economic analysis using modern models and patterns of economic science, consideration of economic problems and challenges facing the head of the firm. The study of this discipline will allow students to obtain and develop knowledge in the field of analytical research of economic, technological and technical parameters of the enterprise, as well as allow you to master the skills of using special methods of economic justification of management decisions and assessment of their consequences.	
Design of transport facilities using Smart City technology, Intelligent technologies in automotive and urban infrastructure		Management of Engineering graphics and computer engineering modeling, Automation, telematics and communications in transport		Economics and business activities		Scientific research methods, Economics and business activities, Fundamentals of financial literacy	
Automation, telematics and communication in transport		Ecology and life safety, Intelligent technologies in the automotive and urban infrastructure		Basics of law and anti-corruption culture, Economics and business activities, Critical thinking		Final certification	
Time -management		Managerial Economics		Final certification		Final certification	
Technical stations and railway junctions, Separate railway points		Ecology and life safety, Intelligent technologies in the automotive and urban infrastructure		Ecology and life safety, Intelligent technologies in the automotive and urban infrastructure		Ecology and life safety, Intelligent technologies in the automotive and urban infrastructure	

M7 - Professional module	PD	EC	Technical stations and railway junctions	210	7	7	LO6	Study of the principles of design, arrangement and equipment of technical stations and nodes, types of longitudinal, transverse profiles and structural elements of the roadbed of the track development of precinct and marshalling yards. Formation of skills in choosing the types and optimal location of station devices, buildings and structures, taking into account the requirements of dimensions, using intelligent technologies. The discipline provides for the development and protection of an individual project	Innovative technologies for the operation of railway sections and directions, Design and operation of railways	Innovative technologies for the operation of railway stations and hubs, Train traffic control systems
			Designing transport facilities using Smart City technology				LO6	Studying the concept of urban transport development, including transport engineering, transport planning, design of facilities using innovative Smart City technologies, the fundamentals of the theory of space, aesthetics and urban landscape. Mastering the skills of constructing intelligent transport routes, studying the dynamics of population movement in the road network, taking into account data on traffic conditions, traffic speed, delays in sections and the operation of transport facilities	Modeling and coordination of traffic on highways, Design and operation of highways	, Traffic safety in motor transport
M7 - Professional module	PD	EC	Separate railway stations	210	7	6	LO6	Study of classification, placement, standard schemes of separate points of the railway network, principles of their design and reconstruction. Acquisition of skills of independent design, justification and decision-making on changing the design, technical equipment and technology of work, mastering methods of increasing the throughput and processing capacity of railway separate points. The discipline involves the use of the group design method. Guest lectures are held with the participation of employers	Management of operational work in transport, Rules for the transportation of goods by rail	Innovative technologies for the operation of railway stations and hubs, Train traffic control systems
			Intelligent technologies in the automotive and urban infrastructure				LO 6	The formation of students' basic concepts and directions in the field of organization and development of intelligent transport systems, in familiarization with existing intelligent systems that are used to organize and manage the transport process, as well as the formation of an idea about the main objects of engineering structures that make up the urban infrastructure and the main intelligent transport systems and technologies used in the automobile and road complex	Intelligent vehicles. Highway design and operation	Innovative activities of motor transport enterprises, Traffic safety in motor transport

Head of the department
«Transport services and business »



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