

AGREED

Head of the Department of dispatching control of the transportation process

"TransCom" LLP

Kosybaev K.K.

2025 y.

EDUCATIONAL PROGRAMS

Education level: Bachelor's degree

THE CATALOG OF DISCIPLINES OF THE COMPONENT OF CHOICE

6B07186 - Transportation process management and railway operation

Duration of study: 3 years

Year of admission: 2025

APPROVED by the
by the Director of the Institute
of Logistics and Business
Musaeva G.S.
ИНСТИТУТ ЛОГИСТИКИ И БИЗНЕСА
АЛТ Университет имени Мухамеджана Тынышпаева

Module	Cycle	Component	Name of the discipline	Total labor intensity		Trimester	Learning outcomes	A brief description of the discipline	Prerequisites	Post-requirements	Department
				in academic hours	in academic credits						
1	2	3	4	5	6	7	8	9	10	11	12
M5 - Module of Economic and Management Competencies	GED	EC1	Green economy and sustainable entrepreneurship	150	5	6	LO5	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	Organization of passenger traffic on the railway network, Organization of wagon traffic on the railway network	Managerial Economics, Time Management, Minor Program 1	SHD&PE
			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	Sociology, Cultural Studies	Political Science, Ensuring Passenger Transport Safety on Railway Transport, Final Certification	TSB
			Fundamentals of financial literacy				LO5	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	Engineering Mathematics 1, Engineering Mathematics 2	Managerial Economics, Time Management, Minor Program 1	TSB
			Digital inclusion				LO3	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 Fundamentals, Engineering Graphics and Computer Modeling, Information and Communication Technologies	Automation of logistics processes (RFID, IoT, sensor networks), Minor program 3	ICT
			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	Automation, telemechanics, and transport communications	Automation, telemechanics, and transport communications	SHD&PE

			Fundamentals of scientific research				LO6	The discipline introduces the fundamentals of scientific activity, covering its goals, methods, and forms, and contributes to the formation of theoretical knowledge and practical skills necessary for successful scientific research in the chosen professional field. It also develops the ability to independently search for, analyze, and apply scientific information, which becomes an important foundation for further research and professional activities.	Applied Physics, Engineering Mathematics 1, Engineering Mathematics 2	Intelligent technologies in the transport hub, Innovative infrastructure of the passenger complex, Final certification	SHD&PE
M7 - Professional module	BD	EC1	Organization of wagon traffic on the railway network	180	6	4	LO7	The discipline is devoted to the study of the theoretical foundations and practical methods of forming, distributing, and regulating wagon flows on the railway network. It examines the basic concepts and classification of wagon flows, including their structure, direction, capacity, stability, and the factors that influence their formation. The discipline also explores the principles of transportation routing, methods of developing optimal train formation plans that take into account economic and technological factors, as well as the capacity of stations and sections.	Transport and logistics systems, General transport course, Interaction of transport modes	Management of railway schools' operational work, Technology of the junction station and access roads	TSB
			Organization of passenger traffic on the railway network				LO10	The discipline covers the theoretical foundations and practical methods of forming, distributing, regulating, and forecasting passenger flows on the railway network. It provides knowledge and skills for optimizing the route network, improving the quality of passenger services, effectively planning transportation, and making rational use of rolling stock. The discipline examines the basic concepts and classification of passenger flows, their structure, direction, capacity, seasonality, and unevenness, as well as the factors that influence their formation.	Transport and logistics systems, General transport course, Interaction of transport modes	Organization and management of passenger transportation, ensuring passenger transport security on rail transport	TSB
	BD	EC2	Rules for the transportation of goods by rail	180	6	4	LO11	Studying 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 are an important part of the transportation process. Acquiring the skills of planning the transportation of goods by rail, drawing up and filing out an invoice and a set of transportation documents in national and international traffic, and compiling a record card for the implementation of the cargo transportation plan.	Transport and logistics systems, General transport course, Interaction of transport modes	Cargo and commercial operations on rail transport, technology of operation of the junction station and access roads	TSB
			Regulatory and Legal Support for Passenger Transportation by Rail				LO10	The course aims to study the legal norms governing the relations arising in the process of passenger transportation by rail. It covers international agreements, national legislation, as well as the rights and obligations of passengers, carriers, and infrastructure owners. The course examines the main sources of legal regulation, including the Rules for the Transportation of Passengers, Baggage, and Cargo, as well as other legal acts.	Fundamentals of Law and Anti-Corruption Culture, Interaction of Transport Modes	Ensuring passenger transport security on rail transport, Intelligent technologies in the operation of a transport hub	TSB
			Technical Regulation and Traffic Safety in Railway Transport				LO12	The discipline is devoted to the study of the technical regulation system aimed at ensuring the safety of traffic and the operation of railway transport. The course examines the regulatory and technical documentation that establishes requirements for infrastructure facilities, rolling stock, and technological processes, as well as the mechanisms for monitoring and supervising compliance with these requirements.	Fundamentals of Law and Anti-Corruption Culture, Modern Technologies for Managing Railway Stations and Nodes	Technology of transport and transfer hubs, Innovative infrastructure of the passenger complex	TSB

	BD	EC3	Ensuring passenger transport security on railways	210	7	7	LO12	The discipline covers methods of protecting passengers from acts of illegal interference and other threats on railway transport, including organizational and technical measures to prevent crimes and actions in emergency situations. Knowledge and skills are formed to ensure the transport security of passengers and their practical application	Regulatory and legal support for passenger transportation by rail, Organization of passenger traffic on the railway network, Organization and management of passenger transportation	Final certification	TSB
M4 - Information Technology and Artificial Intelligence Module	BD	KB4	Intelligent technologies in the operation of a transport hub	150	5	9	LO8	Development of a systematic understanding of the organization of interaction in transport hubs, study of the technology of intelligent management of the transport hub, familiarization with the theoretical and practical achievements in the organization of the transport hub, their connections in interactions in transport hubs, and readiness to use advanced technologies in the development of technological processes for the functioning of professional objects, based on the need to ensure rational modes of operation of transport enterprises and vehicles	Transport security and train traffic control systems, Intelligent passenger transportation management systems in rail transport, Applied artificial intelligence in transport systems	Final certification	TSB
			Технология работы транспортно-пересадочных узлов				PO10	The discipline is aimed at studying the principles of organization, functioning, and interaction of various modes of transport within a single transport and transfer hub (TPU). The course covers the theoretical foundations of TPU design and management, as well as practical aspects of ensuring efficient, safe, and comfortable passenger transfers. It examines the classification and typology of TPU, their functional zoning, and the requirements for the placement and integration of transport facilities within the TPU.	Ensuring passenger transport security on railways, Organizing passenger traffic on the railway network, Modern technologies for managing railway stations and hubs, Applied artificial intelligence in transport systems	Final certification	TSB
M5 - Модуль экономическо-управленческих компетенций	BD	EC5	Managerial economics	90	3	6	PO5	Formation of the conceptual apparatus and development of skills of economic analysis using modern models and regularities of economic science, consideration of economic problems and tasks facing the head of the firm. Studying this discipline will allow students to obtain and develop knowledge in the field of analytical studies of economic, technological and technical parameters of the enterprise, and will also allow to master the skills of applying special methods of economic substantiation of managerial decisions and assessment of their consequences.	Green Economy and Sustainable Entrepreneurship, Fundamentals of Financial Literacy	Final certification	TSB
			Time management				PO5	The discipline studies a system of methods, tools, and approaches aimed at effective time management in order to achieve the set goals. The course is designed to enhance the skills of organizing and optimizing work time, increasing productivity, reducing stress, planning, delegating, using tools and technologies, and understanding one's own time and energy rhythms in order to make the most of one's time.	Green Economy and Sustainable Entrepreneurship, Fundamentals of Financial Literacy	Intelligent technologies in the operation of transport hubs, Technology of transport and transfer hubs	TSB

M4. Information Technology and Artificial Intelligence Module	ПД	EC1	Applied artificial intelligence in transportation systems	180	6	7	LO3	The discipline is aimed at developing an understanding of modern approaches and technologies of artificial intelligence (AI) applied in the field of transport and logistics. The course covers the basic algorithms of machine learning, data mining and decision-making applied to optimize transport processes: flow management, demand forecasting, routing, maintenance, monitoring and security. Special attention is paid to the application of AI in the automation of transport systems, intelligent transport platforms, unmanned and autonomous means of transportation, as well as the digitalization of logistics chains.	Engineering Graphics and Computer Modeling, Python Programming Fundamentals	Transport security and train traffic control systems, Innovative passenger complex infrastructure	TSB
			Intelligent passenger transportation management systems on rail transport				LO3	The discipline is aimed at developing competencies in the design, implementation, and operation of intelligent control systems (ICS) for the organization of passenger transportation. It covers modern digital technologies used for managing passenger flows, automating route planning processes, dispatching, monitoring trains, and informing passengers. The discipline also focuses on the architecture and components of ICS, as well as their integration with other railway transport subsystems, including ticketing, navigation, logistics, and analytical modules.	Transport and logistics systems, Modern technologies for managing railway stations and hubs	Cargo and commercial operations on rail transport, and the technology of transport terminals	TSB
M7. Professional module	PD	EC2	Technology of the junction station and access roads	150	5	7	LO11	The discipline covers modern technologies and methods of organizing the work of various types of transport terminals. It addresses the issues of planning, organizing, and managing technological processes at terminals, as well as ensuring their safety and efficiency. The discipline fosters a comprehensive understanding of the principles of organizing and managing processes at terminals, as well as the practical application of modern methods and technologies to enhance their efficiency and safety.	Transport and logistics systems, Modern technologies for managing railway stations and hubs	Technology of transport terminals, Innovative infrastructure of passenger complexes, Organization of high-speed transport	TSB
			Passenger station operation technology				LO10	The principles of organization and management of technological processes that ensure high-quality and safe passenger transportation are studied. The classification of passenger stations, technologies for performing basic station operations, including the reception and departure of trains, shunting operations, maintenance, equipping passenger cars of various categories, and preparing trains for a voyage, are considered.	Transport and logistics systems, Modern technologies for managing railway stations and hubs	Final certification	TSB
M8. Practice-oriented module	PD	EC3	Technology of operation of transport terminals	150	5	9	LO8	The discipline covers modern technologies and methods of organizing the work of various types of transport terminals. It addresses the issues of planning, organizing, and managing technological processes at terminals, as well as ensuring their safety and efficiency. The discipline fosters a comprehensive understanding of the principles of organizing and managing processes at terminals, as well as the practical application of modern methods and technologies to enhance their efficiency and safety.	Technology of passenger stations, Technology of junction stations and access roads,	Final certification	TSB
			Innovative infrastructure of the passenger complex				LO10	Study of the theoretical foundations and practical aspects of the functioning of passenger infrastructure, which ensures the efficient movement of passengers and the management of relevant transport and information flows in passenger complexes of various scales and purposes; regulatory documents on the interaction of various modes of transport in a unified transport system. Acquisition of knowledge about current trends and innovations in the field of passenger complex infrastructure using smart technologies	Technology of passenger stations, Ensuring passenger transport security on rail transport, Fundamentals of scientific research	Automation of logistics processes (RFID, IoT, sensor networks), Minor program 3, Final certification	TSB

M9 - Sustainable Development and Standards in Transportation Engineering / Module of the Additional Educational Program	PD	EC4	Application of Smart City technology	90	3	7	LO3	The discipline aims to provide students with the theoretical knowledge and practical skills necessary for the design, implementation, and evaluation of smart urban infrastructure that focuses on sustainable development, improving the quality of life, and digital transformation of urban environments. The course covers the technological, organizational, and social aspects of the Smart City concept, including the digitalization of urban services, the management of urban mobility, sustainable resource consumption, and the interaction with citizens through digital platforms.	Engineering Graphics and Computer Modeling, Information and Communication Technologies	Automation of logistics processes (RFID, IoT, sensor networks), Minor program 3, Final certification	TSB
			Minor program 1:				LO3	The first of the three disciplines, which allows you to form additional professional competencies in various subject areas	Зеленая экономика и устойчивое предпринимательство, Основы финансовой грамотности	Технология работы транспортных терминалов, Минорная программа 3, Итоговая аттестация	TSB
	PD	EC5	Automation of Logistics Processes (RFID, IoT, Sensor Networks)	90	3	8	LO8	Modern automation technologies in transport logistics are studied. Students learn to apply RFID tags, the Internet of Things (IoT), and sensor networks for monitoring and managing cargo flows. Special attention is given to increasing transparency, responsiveness, and efficiency of logistics operations through digital solutions and real-time data integration	Python Programming Fundamentals, Professionally Oriented Foreign Language, Digital Inclusion, and Smart City Technology Applications	Final certification	TSB
			Minor program 2:				LO8	The second of the three disciplines, which allows you to form additional professional competencies in various subject areas	Foreign language	Final certification	TSB
	PD	EC6	Organization of high-speed traffic on transport	90	3	9	LO10	The discipline studies the principles of creating and operating high-speed highways, rolling stock and infrastructure, as well as the integration of high-speed traffic into the existing transport network. It examines global experience, technical requirements for high-speed lines and features of rolling stock, principles of traffic management, as well as successful projects and technologies used in different countries.	Technology of passenger stations, Modern technologies for managing railway stations and hubs	Final certification	TSB
			Minor program 3:				LO10	The third of the three disciplines, which allows you to form additional professional competencies in various subject areas	Digital inclusion, Smart City technology, and logistics process automation (RFID, IoT, and sensor networks)	Final certification	TSB
Total volume (variable part)				1710	57						

Head of the Department of TSB

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