AGREED
Deputy Head of production of the Almaty operational locomotive depot of the branch of LLP "KTZ-Freight transportation" - "Almaty branch of FT"
Iskakov M.S.

APPROVED
Director of the Institute "Transport and construction"
Abdreshov Sh.A.
«18» _____03_____ 2025 y.

CATALOG OF ELECTIVE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM **8D07166 - Transport, transport equipment and technologies (profile area)**

Level of education: doctoral studies (profile direction) **Time of study: 3 years** **Year of admission: 2025 y.**

Module	Cycle	Component	Name of discipline	Total labor input		Semester	Learning outcomes	Brief description of the discipline	Prerequisites	Post requisites	Department
				in academic hours	in academic credits						
1	2	3	4	5	6	7	8	9	10	11	12
Module 1 – Scientific competencies	BD	EC	Numerical methods for modeling the movement of transport vehicles	150	5	1	ON1, ON4	Mastering numerical methods for modeling dynamic characteristics of transport vehicles and adaptation of structures. Competencies in the design, optimization and development of innovative solutions are being formed using engineering software and digital modeling. It includes the analysis and interpretation of experimental data to improve performance, and the creation of innovative products in the context of reliability, safety, and SDGs.	Bachelor's and Master's disciplines	RWDS, FC, Research Practice	RS
			Digital innovation management technologies				ON2, ON4, ON6	Mastering digital tools for managing innovation processes in the transport industry. The methods of big data analysis, digital management of innovative projects and integration of artificial intelligence are considered. Competencies are being formed for monitoring technological trends, forecasting, building road maps, evaluating and implementing innovative solutions. The ability to develop strategies for sustainable innovative development, improve the efficiency of transport systems, and manage scientific, technical, and organizational risks is developing.	Master's disciplines	RWDS, FC, Research Practice	RS

1	2	3	4	5	6	7	8	9	10	11	12
Module 2 - Profile Competencies	PD	EC	Methods of vehicle recovery analysis	150	5	1	ON1, ON3, ON4	Modern approaches to diagnostics, choice of repair technology, quality control and design of processes of restoration of transport equipment are considered. The methods of economic assessment of the life cycle, the effectiveness of restoration and the use of resource-saving, environmentally friendly technologies are studied. Competencies in process management, analysis, and implementation of innovative repair and modernization methods are being formed. Digital modeling tools are being mastered, and science-based recommendations are being developed to improve operational reliability, taking into account standards, risks, and SDGs.	Bachelor's and Master's disciplines	RWDS, FC, Research Practice	RS
			Intelligent methods of planning and managing repair processes				ON2, ON4	Study of optimization of repair processes using AI and digital technologies; development of intelligent algorithms for planning, diagnostics, and forecasting the condition of transport equipment. Automation platforms for managing repair processes and analyzing their characteristics are being developed. Decision-making skills based on data and forecasts, management of technical, organizational risks and resources are being developed to increase reliability and introduce innovations that correspond to the rational use of resources in accordance with the SDGs.	Bachelor's and Master's disciplines	RWDS, FC, Research Practice	RS
Total				**300**	**10**						