

AGREED

**Chief Engineer of the project,
Director of LLP «Kazakh
Promtransproject»
Musaev M.T.
«17» 03 2025 y.**

**APPROVING**

**Director of the Institute
«Transport and Construction»
Abdreshov S.A.
«19» 03 2025 y.**

THE CATALOG OF DISCIPLINES OF THE COMPONENT OF CHOICE**EDUCATIONAL PROGRAM 8D07170 Transport facilities****Education level: PhD****Duration: 3 year****Admission year: 2025 y.**

№	Cycle	Component	Name of the discipline	Total labor intensity		Term	Learning outcomes	Brief description of the discipline	Prerequisites	Post-requirements
				in academic hours	in academic loans					
1	2	3	4	5	6	7	8	9	10	11
1	BD	EC	Development and patenting of innovations in road construction	150	5	1	LO3	The purpose of the discipline is to teach modern methods of creating and implementing innovative technologies, materials and constructive solutions in road construction with subsequent legal protection of the results of intellectual activity.	Disciplines of the cycle of master's degree courses	Research practice, Research work of the doctor, Final certification
2	BD	EC	Mathematical modeling methods using artificial intelligence			1	LO3	The purpose of the discipline is to provide doctoral students with system knowledge and practical skills in applying mathematical modeling methods using artificial intelligence (AI) technologies to solve research and engineering problems, including the construction, analysis and optimization of models of complex systems in various subject areas	Disciplines of the cycle of master's degree courses	Research practice, Research work of the doctor, Final certification

3	PD	EC	Sustainable development of transport infrastructure	150	5	1	LO5,6	The purpose of the discipline is to provide doctoral students with a systematic understanding of the principles of sustainable development and develop competencies in analyzing, designing and implementing environmentally, economically and socially sustainable solutions in transport infrastructure, taking into account current global trends, standards and challenges in the field of sustainability and climate change.	Disciplines of the cycle of master's degree courses	Research practice, Research work of the doctor, Final certification
4	PD	EC	Methods and technologies of experimental research in road construction			1	LO5,6	The purpose of mastering the discipline: To provide doctoral students with deep theoretical knowledge and practical skills in planning, conducting and analyzing experimental research aimed at developing, evaluating and implementing new materials, structures and technologies in road construction, taking into account modern requirements for scientific validity, accuracy and reproducibility of results.	Disciplines of the cycle of master's degree courses	Research practice, Research work of the doctor, Final certification

Head of the department «Architectural and construction Engineering»

Kulmanov K.S.