

AGREED:
 Director
 LLP «Nurly Kala 2030»



Abaihan E.
 2023



APPROVING
 Director of the Institute
 "Transport Engineering"
 Chigambaev T. O.

" 30 " 03 2023

CATALOG OF ELECTIVE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM

7M07161 Transport Infrastructure Engineering

Level of education: Master's degree in scientific end pedagogical

Duration of study: 2 years

Year of admission: 2023

Module	Cycl e	Compon ent	Name of the discipline	Total labor intensity		Seme ster	Learni ng outco mes	Brief description of the discipline	Prerequisites	Post-requisites	Departm ent
				academic hours	academic credits						
1	2	3	4	5	6	7	8	9	10	11	12
Module 1-	BD	KV	Elasticity and plasticity	270	9	1	NO3	Study of modern analytical and engineering methods for stress-strain state analysis objects of the transport industry, as well as software packages designed to study the stress-strain state of transport structures for various purposes, to analyze stresses and strains, to solve elementary two-dimensional problems in rectangular and polar coordinates and three-dimensional problems of elasticity theory, using experimental methods of solutions.	Bachelor's degree courses	Application of the finite element method in transport infrastructure problems Research practice Strategic management Design and estimate documentation of transport structures	SI
			Mechanics of elastic					NO3			

			deformable solid					based on general laws that build a single connected structure of the theory of the continuum model of matter and the basic equations of continuum mechanics, solutions to the problem of elastic-plastic deformation of solids and rocks, problems of deformation of bulk and powder, as well as composite materials.		element method in transport infrastructure problems Research practice Strategic management Design and estimate documentation of transport structures	SI
Module 1-	BD	KV	Strategic management	180	6	2	NO4	Formation of master's students ' basic practical skills in the field of strategic management of enterprises and organizations, strategic analysis of the external and internal environment of the company, corporate management strategy. The discipline will study: methodology of strategic management; analysis of strategic factors; management analysis; portfolio analysis; competitive advantages and diversification.	Bachelor's degree courses	Application of the finite element method in problems of transport infrastructure Research practice Diagnostics of transport infrastructure objects Control of the technical condition of transport infrastructure objects	LMT
			Business research				NO4	Master's students ' mastery of theory, as well as the development of practical skills in business research and analytics, life cycle analysis development of promising technologies scientific and technical aspects of the project are being studied.		Bachelor's degree courses	Design and estimate documentation of transport structures Strengthening of transport

										infrastructure objects Complex design solutions for the reconstruction of transport infrastructure objects Application of the finite element method in the problems of transport infrastructure	
Module 2- Device, operation and monitoring of transport infrastructure	BD	KV	Construction of transport infrastructure facilities	180	6	1	NO6	Study of public and strategic service transport infrastructure objects by transport modes depending on various target functional purposes, classifications, types, technical and operational parameters, structural and technical and economic solutions, methods of design and calculation of transport structures under various force impacts, taking into account their regional significance physical-geographical and natural-climatic location.	Bachelor's degree courses	Application of the finite element method in transport infrastructure problems Innovative technologies in transport construction Digitalization of transport infrastructure R & D, IA.	SI
			Maintenance and repair of transport infrastructure facilities				NO6	PO6 Study of modern methods, methods and technical means of mechanization, mechanization and automation for the development of technological processes for complex complexes and certain types of work on the current maintenance and repair of infrastructure facilities transport facilities, taking into account their technical, technological and operational	Bachelor's degree courses	Application of the finite element method in transport infrastructure problems Innovative technologies	SI

								characteristics and a feasibility study of capital investments and operating costs.		in transport construction Digitalization of transport infrastructure R & D, IA.	
Module 3- Design and estimate documentation	BD	KV	Design and estimate work in transport construction	180	6	2	NO7	Studies the functional and operational requirements of transport construction, the requirements of regulatory and legislative acts and documents, design output data, the procedure for developing, forming and making design decisions, evaluating the quality of design decisions and developing design and estimate documentation with the design and estimate documentation, general information about design and survey work and estimate documentation for transport construction.	Bachelor's degree courses	Application of the finite element method in transport infrastructure problems Innovative technologies in transport construction Digitalization of transport infrastructure NIRM, IA.	SI
			Design and estimate documentation of transport structures				NO7	Studies the preparation of a set of documents that reveal the essence of the project and contain justification for its feasibility and further implementation, made to ensure the reliability and durability of transport structures, using theoretical fundamentals of compaction of the groundbed and normalization of the degree of compaction, basic provisions on methods and means of ensuring the required degree of compaction of transport structures.	Bachelor's degree courses	Application of the Finite element method in transport infrastructure problems Innovative technologies in transport construction Digitalization of transport infrastructure NIRM, IA.	SI
			Innovative technologies in transport	180	6	2	NO8	Study of the essence, principles and directions of digital activity, information and analytical automated systems of	Bachelor's degree courses	Application of the finite element	

Module 4-IT technologies in transport infrastructure	BD	KV	construction					organizations (enterprises) for ensuring the quality of transport construction with technical solutions aimed at simplifying the process and reducing the construction time, management of operational activities		method in problems of transport infrastructure Research practice Maintenance and repair of transport infrastructure facilities Design and estimate in transport construction	SI
			Digitalization of transport infrastructure					NO 8		RO8 Formation of theoretical knowledge in the field of digital technologies used in production, as well as familiarization with the main trends in the development of production due to the introduction of digital technologies. The study focuses on the sustainable development of transport infrastructure, increasing the overall economic impact of the design, construction and operation of transport infrastructure through the use of digital technologies, and informatization in the field of planning, design, construction and operation of transport infrastructure.	Bachelor's degree courses
Module 2-Construction,	PD	KV	Diagnostics of transport infrastructure objects	270	9	3	NO9	Studies the logical correspondence between various requirements of regulatory literature in the diagnosis of transport infrastructure objects (calculation load capacity, loads and impacts, load-bearing capacity, deformations and displacements, technical and economic indicators, development of survey and test programs, proposals and	Disciplines Bachelor's	degree in Research and Development, IA.	SI

operation and monitoring of transport infrastructure								measures for effective and safe diagnostic methods) in order to make the most optimal decisions on assessing their technical condition.			
			Monitoring the technical condition of transport infrastructure facilities					NO9			
Module 2- Design, operation and monitoring of transport infrastructure	PD	KV	Strengthening transport infrastructure facilities	180	6	6		Forming knowledge of a holistic perception and prospects for strengthening the current technical condition of infrastructure facilities to modern requirements, is aimed at studying approaches used to process data on design and problem solving by searching possible new parameters, operational and technical conditions for placing devices of all farms based on the results of technical and economic decisions.	Bachelor	's degree courses in R & D, IA.	SI
			Integrated design solutions for the reconstruction of transport infrastructure facilities					NO10	RO10 Develops knowledge on the analysis of technical conditions and parameters of transport infrastructure objects, regulatory and operational requirements, on the application of methods for solving complex problems of the efficiency of transition to a new technical state after the reconstruction of objects with an increase in the size of transportation.	Bachelor	's degree courses in R & D, IA.

Head of the Department of "Construction Engineering"



Ismagulova S. O.