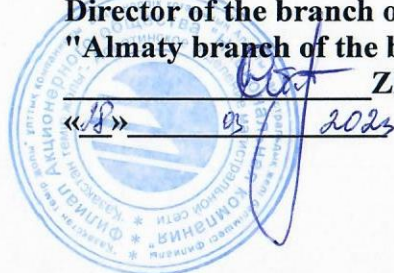


APPROVED:

Director of the branch of JSC "NC" "KTZ"  
"Almaty branch of the backbone network"

Zheksenbiev A.T



### CATALOG OF ELECTIVE COMPONENT DISCIPLINES

#### ABOUT THE EDUCATIONAL PROGRAM

#### 7M07162-Transport Infrastructure Engineering

Education level: Master s degree

Duration of study: 1.5 года

Year of admission: 2023

Module	Cycle	Com pone nt	Name of the discipline	Total labor		inten sity Seme ster	Lear ning outco mes	Brief description	of the discipline	Prerequisites	Post- require ments of
				the Depa rtme nt acad emic hours	acad emic credi ts						
	1	2	3	4	5	6	7	8	9	10	
Module 1-		KV	Lean Production	270	9	2		Studies the basics of managing an organization based on the principles of lean production: minimizing all types of losses in the process to achieve the maximum possible result in the shortest possible period of time, rational use of all types of resources, improvement of aspects of the organization's activities, involvement of employees in technological processes; formation of lean thinking among future managers that correlates with the ideas of sustainable development and conscious consumption concepts that are relevant for the modern world.	Ecology and life safety	Methodology of operational developments	PS



			of the SMART technologies in transport substation					Intelligent technologies used in railway transport are considered and studied. The main concepts of the current state and prospects for the development of railway transport infrastructure based on SMART technologies are described. Familiarization of students and formation of skills to assess the improvement of operational safety of railway transport infrastructure facilities, taking into account the development of computer technologies, software and artificial intelligence.	Information and communication technologies	Design and estimate work in transport construction, Design and estimate documentation of transport structures	PS
Module 2-Device, operation and monitoring of transport infrastructure	PD	KV	Diagnosics of transport infrastructure objects	270	9	1	Examines the logical correspondence between various requirements of regulatory literature when diagnosing transport infrastructure objects (calculation of load capacity, load and impact, load-bearing capacity, deformations and displacements, technical and economic indicators, development of survey and test programs, proposals and measures for effective and safe diagnostic methods) in order to make the most optimal decisions on assessing their technical condition.	Digital diagnostics of construction objects	Innovative technologies in transport construction, Digitalization of infrastructure	SI	
			, Monitoring the technical condition of transport infrastructure objects				Studies the basics of analyzing the technical condition of transport infrastructure objects based on the results of surveys, developing methodological materials, proposals and measures for effective and safe methods of surveys and testing of transport infrastructure objects, basic methods and methods of surveys Digital diagnostics of construction objects Innovative technologies in transport construction, Digitalization and testing of artificial structures necessary for the purpose of solving practical problems related to	Digital diagnostics of construction sites	Innovative technologies in transport construction, Digitalization	SI	



							assessing their technical condition			
			Construction of transport infrastructure				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 transport infrastructure facilities, taking into account their technical, technological and operational characteristics and feasibility study of capital expenditures. investment and operating costs.	Construction of railway track	Design and estimate documentation of transport structures, Design and estimate work in transport construction	SI
Module 2-Construction, operation and monitoring of transport infrastructure	PD	KV	Maintenance and repair of transport infrastructure objects	180	6	1	Study of public and strategic service transport infrastructure objects by transport modes depending on various target functional purposes, classifications, types, technical and technical characteristics operational parameters, structural and technical-economic solutions, methods of design and calculation of structures of transport structures under various force impacts, taking into account their regional physical-geographical and natural-climatic location.	Construction of transport infrastructure facilities, Maintenance and repair of transport infrastructure facilities	Design and estimate documentation of transport structures, Design and estimate work in transport construction	SI
	PD	KV	Design and estimate work in transport construction	180	6	2	Studies the functional and operational requirements of transport construction, requirements of regulatory and legislative acts and documents, design output data, procedure development, formation and adoption of design decisions, assessment of the quality of design decisions and	Construction of transport infrastructure facilities, Control of the technical condition of	Design and defense of the Master	



							development of design and estimate documentation with design and estimate documentation, general information about design and survey work and estimate documentation for transport construction.	transport infrastructure facilities		SI
Module 4-Design and estimate documentation			Design and estimate documentation of transport structures				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.	Construction of transport infrastructure facilities, Maintenance and repair of transport infrastructure facilities	Design and defense	SI
Module 3-IT Innovative	PD	KV	Innovative technologies in transport construction	180	6	2	Study of the essence, principles and directions of digital activity, information and analytical automated systems of organizations (enterprises) for ensuring the quality of transport construction with technical solutions that make construction and operational management easier and faster строительства и управление эксплуатационной деятельностью	Arrangement of transport infrastructure objects, Control of the technical condition of transport infrastructure objects	Registration and defense of the master	SI
			Digitalization of transport infrastructure of transport infrastructure				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, study of the principles of	Arrangement of transport infrastructure objects, Control of the technical	Registration and defense of the master	SI

								operation of the main components of digital systems, acquisition of theoretical knowledge in the development and implementation of a digital transformation strategy production activities.	condition of transport infrastructure objects		
	<b>Total</b>			<b>1080</b>	<b>36</b>						

Head of the Department of "Construction Engineering"

Ismagulova S. O.