SATBAYEV UNIVERSITY

Institute of Architecture and Construction. T.K. Basenova
Department of Construction and Building Materials

EDUCATIONAL PROGRAM
7M07322 "Transport construction"
Master of Engineering and Technology

code and name of the educational program

Code and classification of the field of education: 7M07 Engineering, manufacturing and construction industries
Code and classification of areas of study: 7M073 Architecture and construction
Group of educational programs: M126 Transport construction
NQF level: 7
ORC level: 7
Duration of study: 1,5 years
Credits: 90

Almaty 2023

NJSC "Kazakh National RESEARCH Technical University"
named after K.I. Satpaev"

Educational program 7M07322 "Transport construction"approved at a meeting of the Academic Council of KazNITU named after. K.I. Satpaeva.

Protocol No. 3 of "27" ___10___ 2022

Considered and recommended for approval at a meeting of the Educational and Methodological Council of KazNITU named after. K.I. Satpaeva.

Protocol No. 2 of "21" ___10___ 2022

Educational program 7M07322 "Transport construction"developed by the academic committee in the direction of "Architecture and construction"

FULL NAME.	Academic degree/ academic title	Job title	Place of work	Signature
Chairman of the academic committee:				
Akhmetov Daniyar Akbulatovich	candidate of technical sciences	Head of Department, associate Professor	JSC "Kazakh National Research Technical University named after K.I. Satpayev", mobile phone: +77081240298	
Teaching staff:				
Uskembayeva Bagdat Oralbekovna	Candidate of Technical Sciences	Associate Professor	NAO "Kazakh National Research Technical University named after K.I.Satpayev", mobile phone: +77479345027	
Shayakhmetov Saulet Berlikashevich	Doctor of Technical Sciences	Professor	NJSC "Kazakh National Research Technical University named after K.I. Satpayev", mobile phone: +77013735996	
Kistaubayev Saken Bakytzhanovich	Master of Engineering	PhD student	NJSC "Kazakh National Research Technical University named after K.I. Satpayev", mobile phone: +777895401 34	
Employers:				
Nusupov Dzhetybay Kozhabekovich	candidate of technical sciences	Head of Geo Track LLP	GEOTRACK LLP, mobile phone: +77017460487, work phone: +77272919496, +77272784371	
Students				
Zhumamuratov Manarbek		2nd year Master's student	NAO "Kazakh National Research Technical University named after K.I.Satpayev", mobile phone: 2nd year Master's student +77056310024	

F KazNITU 703-05 Educational program

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1. Description of the educational program

Area of professional activity: Railway transport, transport construction.

Objects of professional activity:

– Local executive authorities in the field of railway transport and their regional structures;

– Organizations and enterprises of the transport industry in the field of management, operation, maintenance of the railway track, rail urban transport and subways, as well as industrial transport;

– Organizations and enterprises of the transport industry in the field of materials processing technologies for maintenance, urban rail transport, subways and industrial transport.

Masters of the specialty7M07320 "Transport construction» can perform the following professional activities:

- production and technological;
- organizational and managerial;
- experimental research;
- calculation and design;
- research;
- pedagogical.

Functions of professional activity:

Production and technological:

- planning and solving technological problems encountered in the production process;

- participation in the development of draft specifications and requirements, standards and technical descriptions, regulatory documentation for new objects of professional activity; formation of the goals of the project (program), solving problems, criteria and indicators for achieving goals, building the structure of their relationships, identifying priorities for solving problems, taking into account the moral aspects of activity;

- efficient use of materials and raw materials, equipment, technology, modern computer programs for calculations and design of technological process parameters;

- organization and effective implementation of input quality control of raw materials, production control of semi-finished products and parameters of technological processes, quality of finished products;

- engineering and technical operation of buildings and structures.

Organizational and managerial:

- economic and organizational-planning calculations for the reorganization of production;

-organizing the work of the labor collective of performers with the creation of the necessary conditions, equipping (providing) production with labor and material resources, making optimal management decisions in various production conditions;

- finding the best solutions in case of labor disputes regarding staffing, wages, cost and quality of various types of work, ensuring life safety, labor protection and environmental safety in production areas;

- organization of the work of a team of performers, selection, justification, adoption and implementation of management decisions in the face of different opinions, determining the order of work; organizing and conducting the preparation of initial data for the selection and justification of scientific, technical and organizational solutions based on economic analysis;

- assessment of production and non-production costs to ensure the quality of construction and repair products.

Experimental research:

-development of theoretical models that allow predicting the change in the technical condition of transport facilities and the dynamics of the parameters of the efficiency of their technical operation; analysis of the state and dynamics of quality indicators of objects of professional activity using the necessary methods and means of research; development of plans, programs and methods for conducting research on objects of professional activity; conducting scientific research on individual sections (stages, tasks) of the topic as a responsible executor or together with a supervisor;

- analysis, synthesis and optimization of processes for ensuring the quality of tests, certification of products and services using problem-oriented methods; information search and analysis of information on research objects;

- implementation of metrological verification of the main measuring instruments; implementation of experimental design developments; substantiation and application of new information technologies; participation in the preparation of practical recommendations on the use of research and development results;

Calculation and design:

- participation in the design of new and reconstruction (modernization) of existing transport facilities, in the development of technological processes for the maintenance and repair of transport facilities;

- production of appropriate calculations of structural elements of structures of the transport and communication and oil and gas complexes;

- drawing up projects and a feasibility study for the construction of new, repairs, current maintenance and reconstruction of existing facilities of the transport and communication and oil and gas complexes.

- the use of information technologies in the calculation of the structures of transport facilities, the design of new and reconstruction (modernization) of existing transport facilities, the development of technological processes for the maintenance and repair of transport facilities;

Research and teaching:

- possession of basic knowledge in the field of civil, financial, commercial and other branches of law;

- the ability to navigate the current legislation and the ability to apply individual legal norms in practice;

- conducting expertise and providing consulting assistance in various production situations.

- organization of the process of training and education in the field of education using technologies that reflect the specifics of the subject area and correspond to the age and psycho-physical characteristics of students, including their special educational needs;

- designing educational programs and individual educational routes for students; designing the content of academic disciplines (modules), forms and methods of control and control and measuring materials;

- designing educational environments that ensure the quality of the educational process; designing a further educational route and professional career

Qualification:

Qualifications and positions are determined in accordance with the "Qualification Handbook of the Positions of Managers, Specialists and Other Employees", approved by Order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated May 21, 2012 No. 201-p-m (as amended on April 17, 2013) . Graduates of the specialty 7M07320 "Transport construction" can work in the following positions:

- master of technical sciences: organizations of higher and secondary vocational education; research and design institutions; the Bureau; companies, firms and organizations (enterprises) of the construction, transport and communication, construction and road, mining, oil and gas and military complexes; companies, firms and organizations (enterprises) of other infrastructures of the economy;

Professional competence:- the ability to apply knowledge, skills and personal qualities for successful activities in solving engineering problems in the construction industry.

2. Purpose and objectives of the educational program

Purpose of the OP: Preparation of competitive, in-demand personnel of the subject area with organizational, management, research and professional competencies in accordance with International and professional standards.

Objectives of the educational program:

Assistance in the formation of the graduate's ability to:

— integrate knowledge, cope with complexity and make judgments based on incomplete or limited information, taking into account the ethical and social responsibility for the application of these judgments and knowledge;

- clearly and clearly communicate their conclusions and knowledge and their rationale to specialists and non-specialists;

- demonstrate developmental knowledge and understanding acquired at the higher education level, which is the basis or opportunity for original development or application of ideas, often in the context of scientific research;

- apply knowledge, understanding and ability to solve problems in new or unfamiliar situations in contexts and within broader (or interdisciplinary) areas related to the field of study;

Assistance in the formation of a graduate's readiness:

- develop design documentation for the creation and modernization of elements of the transport industry;

- conduct a feasibility study, comprehensively justify the decisions made and implemented in the field of operation, repair and maintenance of transport complex facilities;

- to apply the results in practice, the desire for self-development, improving their qualifications and skills;

- to the economical and safe use of natural resources, energy and materials during operation, repair, maintenance;

- develop technical documentation and methodological materials, proposals and activities for the creation and modernization.

3. Requirements for evaluating the learning outcomes of an educational program

3.1 Entry requirements

The previous level of education of applicants is higher professional education (bachelor's degree). The applicant must have a diploma of the established form and confirm the level of knowledge of the English language with a certificate or diplomas of the established form.

The procedure for admission of citizens to the magistracy is established in accordance with the "Model Rules for Admission to Education in Educational Organizations Implementing Educational Programs of Postgraduate Education".

The formation of a contingent of undergraduates is carried out by placing a state educational order for the training of scientific and pedagogical personnel, as well as paying for education at the expense of citizens' own funds and other sources. The state provides citizens of the Republic of Kazakhstan with the right to receive free postgraduate education on a competitive basis in accordance with the state educational order, if they receive education at this level for the first time.

Scientific, experimental research activities

- implementation of fundamental and applied scientific research in the study of objects of civil and industrial complexes;

- creation of new production technologies;

- implementation of experimental design developments;

- analysis of the state and dynamics of objects of activity using modern methods and techniques;

- production of scientifically substantiated experimental studies at the facilities of civil complexes;
- carrying out standard and certification tests of materials and products;
- implementation of metrological verification of fixed measuring instruments, reagents, hydrocarbon raw materials and final products.

Educational (pedagogical) activity

- possession of the functions of teaching courses in basic disciplines, technology, organization, planning and management of construction production, the performance of educational work as a teacher (teacher) in institutions of secondary and vocational education (educational institutions).

At the "entrance" a master's student must have all the prerequisites necessary for mastering the corresponding educational program of the master's program. The list of required prerequisites is determined by the higher education institution independently.

In the absence of the necessary prerequisites, the undergraduate is allowed to master them on a paid basis.

3.2 Requirements for completing studies and obtaining a diploma

Degree awarded/ qualifications: A graduate of this educational program is awarded the academic degree of Master of Engineering.

A graduate who has mastered master's programs should have the following general professional competencies:

- the ability to independently acquire, comprehend, structure and use new knowledge and skills in professional activities, develop their innovative abilities;
- the ability to independently formulate research goals, establish a sequence for solving professional problems;
- the ability to put into practice the knowledge of fundamental and applied sections of the disciplines that determine the direction (profile) of the master's program;
- the ability to professionally choose and creatively use modern scientific and technical equipment to solve scientific and practical problems;
- the ability to critically analyze, present, defend, discuss and disseminate the results of their professional activities;
- possession of skills in the preparation and execution of scientific and technical documentation, scientific reports, reviews, reports and articles;
- willingness to lead a team in the field of their professional activity, tolerantly perceiving social, ethnic, confessional and cultural differences;
- readiness for communication in oral and written forms in a foreign language to solve the problems of professional activity.

A graduate who has mastered the master's program must have professional competencies corresponding to the types of professional activities that the master's program is focused on:

- *production activity:*

- the ability to independently carry out production, field and laboratory and interpretation work in solving practical problems;

- the ability to professionally operate modern field and laboratory equipment and instruments in the field of the mastered master's program;

- the ability to use modern methods of processing and interpreting complex information to solve production problems;

project activity:

- the ability to independently draw up and submit projects for research and development work;

- readiness to design complex research and scientific and production works in solving professional problems;

organizational and managerial activities:

- readiness to use practical skills of organizing and managing research and scientific and production work in solving professional problems;

- readiness for the practical use of regulatory documents in the planning and organization of scientific and production work.

When developing a master's program, all general cultural and general professional competencies, as well as professional competencies related to those types of professional activities that the master's program is focused on, are included in the set of required results for mastering the master's program.

4. Passport of the educational program

4.1.General information

No.	Field name	Note
1	Code and classification of the field of education	7M07 Engineering, manufacturing and construction industries
2	Code and classification of areas of study	7M073 Architecture and construction
3	Group of educational programs	M126 Transport construction
4	Name of the educational program	7M07322 "Transport construction"
5	Brief description of the educational program	The sphere of professional activity can be the following industries: transport and communication, construction, chemical, production and technological industry, organizational and managerial, experimental research, design and calculation, research, pedagogical.
6	Purpose of the OP	Preparation of competitive, in-demand personnel of the subject area with organizational, management, research and professional competencies in accordance with International and professional standards.
7	OP type	new
8	NQF level	7
9	ORC level	7
10	Distinctive features of the OP	No
11	List of competencies of the	B - Basic knowledge,

	educational program:	P - Professional competencies, M - Universal, social and ethical competencies: C - Special and managerial competencies:
12	Learning outcomes of the educational program (RO OP):	LO 1- Apply the skills of personnel management, production, management psychology, strategic management and business research information support. RO 2- Interpret and present the results of scientific research, research results in the form of reports, abstracts, publications and public discussions, including in a foreign language. RO 3- Formulate methods for solving scientific and technical problems with any variable, permanent objects of study, with complex systems by solving problems on the seismic resistance of buildings and structures, probability theory and seismic statistics. LO 4 - Develop methods for solving a comprehensive assessment of the technical condition for strengthening transport facilities using modern materials and the use of modern methodology of theoretical, experimental research. LO 5- Assess the quality of design solutions based on the requirements of regulatory documents, rational planning and design of facilities, risk analysis and mitigation, digital technologies and information security. RO 6 - Develop a building structure based on the methods of the theory of elasticity, oscillatory and physically non-linear complex engineering problems using the finite element method with an assessment of the stress-strain state of transport structures RO7-Develop comprehensive solutions for the design and reconstruction of transport facilities based on engineering calculations in order to maximize the efficiency of organizing traffic, intellectual property objects. RO 8 - Assess the technical condition of transport facilities based on modern methods of diagnostics, non-destructive testing, ultrasonic flaw detection and geotechnical design of transport facilities. RO 9 - Solve the technical and economic indicators of artificial structures using experimental methods, modern software and hardware systems and systems. RO 10 - Analyze the history and philosophy of science as a system of concepts of world and Kazakhstani science, considered in the complex of scientific humanitarian, natural and applied.
13	Form of study	full-time
14	Training period	1,5 years
15	Volume of loans	90
16	Languages of instruction	Kaz, Russian
17	Awarded Academic Degree	Master of Technical Sciences in the educational program 7M07322 - "Transport Construction"
18	Developer(s) and authors:	Department "SiSM"

4.2. The relationship between the achievability of the formed learning outcomes in the educational program and academic disciplines

No.	Name of the discipline	Brief description of the discipline	Number of credits	Formed learning outcomes (codes)									
				RO6	RO6	RO6	RO6	RO6	RO6	RO7	RO8	RO9	RO10
Cycle of basic disciplines (DB) University component (VC):													
1	**Foreign language (professional)**	The course is aimed at developing vocabulary and grammar for effective communication in the field of project management and improving reading, writing, listening and speaking skills at the Intermediate level. It is expected that undergraduates will acquire and replenish their vocabulary of business English and study grammatical structures that are often used in the context of management. The course consists of 6 modules.	2		+					+			
2	**Management**	The course provides an overview of business and management both in the field of theoretical developments and practical activities. It includes consideration of classical management theories and modern approaches to organizations and business conduct. The main blocks of the course are management functions, connecting management processes and	2	+							+	+	

		interaction between the organization and the external environment. Special emphasis is placed on social responsibility and business ethics, and also includes elements of project management.											
3	**Management Psychology**	The discipline "Psychology of management" deals with the problems of managerial decision-making in the conditions of practical work of the organization. The relationship of the manager with the staff, the ways of their productive cooperation, methods of conflict resolution are analyzed, special attention is paid to group dynamics, negotiation processes and decision-making technology. Management psychology as a science relies on various psychological methods, the main of which are observation and experiment.	2	+									+
Cycle of basic disciplines (DB) **Component of choice (KV)**													
4	**Earthquake resistance of buildings and structures**	The purpose of studying the discipline is to acquire in-depth knowledge and skills necessary for a specialist in the design of buildings and structures in seismically active areas, mastering the practice of calculating buildings and structures for dynamic loads, including seismic. The	4			+			+				

		discipline studies types of dynamic loads, methods of their mathematical description, causes of earthquakes, principles of seismoregionation and microseismoregionation, principles of earthquake classification by score. A new regulatory framework (Eurocodes) for earthquake-resistant construction of civil and industrial buildings and structures. Basic methods for solving differential equations. Calculation of the strength and stability of buildings and structures to seismic loads. Advanced technologies of seismic reinforcement of buildings and structures used in world practice.											
5	**System analysis**	The task of studying the discipline is to master the theoretical principles and categories of system analysis, general theory of systems, information theory, modeling theory; mastering the practical skills of system analysis techniques for their use in making technical and managerial decisions.	5	+						+			
6	**Strategic management**	The discipline provides the study of the concepts of management in organizations and consists of the following modules: strategic management of the organization, the role of the mission and goals of the	5	+						+			

		organization, strategic analysis of the external and internal environment of the company, competitive strategies of the company, strategy development and implementation, corporate strategy, management of strategic changes											
7	**Theory of elasticity and plasticity**	Discipline is a component of choice. The discipline studies the issues of mechanical reliability of complex spatial structural elements, calculation of complex structural elements, spatial structures, structures for strength, rigidity and stability; mathematical analysis and modeling, theoretical and experimental research; basic provisions and calculation methods. Modern methods of formulation, research and solution of problems of mechanics.	4			+			+				
Cycle of profile disciplines (PD) Component of choice (KV)													
8	**Business Research**	The discipline examines the main characteristics of business research at the enterprise, the concept of technology and the market in business research, the economic parameters of the project as the basis of business research, forecasting and planning in business research. Business research of financial planning in the transport construction planning system, the essence of business management from the strategic positions of the	5	+								+	+

		organization's activities in the modern market environment, modern approaches to management by analytical management methods, methods of diagnosis, analysis and problem solving.											
9	**Diagnostics of transport facilities**	The discipline is based on the study of diagnostics of transport structures using methods of non-destructive testing of railway rails, ultrasonic flaw detection of railway rails, bridges, pipes and tunnels, ultrasonic inspection of welded joints of rails at rail welding enterprises, the use of new models of flaw detectors for monitoring rails, bridges and pipes; static and dynamic tests of transport structures; assessment of the technical condition of the structure according to diagnostic data; registration of diagnostic results.	5				+			+	+	+	
10	**Intellectual property protection**	Discipline is a component of choice. The purpose of studying the discipline is: The formation of a complex of modern knowledge about the nature and methods of intellectual property protection; the formation of skills of interpretation and practical application of legal norms in this area for participation in analytical, organizational and managerial, innovative and entrepreneurial and other types of professional activities; mastering the basics of legal regulation and the operation of legal norms for the protection of intellectual property.	5				+			+		+	
11	**Innovative technologies for**	The purpose of mastering the	5							+	+		

	the production of building products and structures	discipline is to form undergraduates' competencies about the main types of innovative technologies for the production of building materials, products and structures of various functional purposes for solving scientific, technical and technical-economic tasks in the field of activity and to develop the organization of the introduction of modern technologies into production. In the process of studying, skills are formed to improve the technological processes of production of construction products, taking into account new achievements in the field of modern equipment and controls.											
12	**Comprehensive design solutions for the reconstruction of transport facilities**	The discipline is aimed at monitoring, evaluation and design solutions of the condition of transport facilities (railway tracks, highways and airfields, artificial structures on railways and highways, oil and gas facilities). Types and frequency of inspections and technical means of comprehensive assessment of the technical condition of transport facilities. Organization of works of means of complex assessment of the technical condition of transport facilities.	5							+	+	+	
13	**Mechanics of a deformable solid**	The discipline studies the stress-strain state of a point of a deformable solid, the physical relations of the mechanics of a deformed solid. The problems of elasticity theory, boundary conditions, and the plane problem of	5						+			+	

		elasticity theory in Cartesian and polar coordinates are considered. Provides in-depth knowledge and methods for solving problems arising in the study of deformation of solids, the mechanics of their destruction, experimental and numerical methods of mechanics of deformable solids.											
14	**Inspection and testing of artificial structures**	The discipline is aimed at studying and identifying the actual technical condition of artificial structures using non-destructive testing methods, conducting static and dynamic tests of artificial structures using software and hardware complexes and systems, planning maintenance and repair of artificial structures based on the use of objective information about the technical condition of artificial structures, forming a database on artificial road structures, preparation of technical reports, technical passports of artificial structures.	5				+			+		+	
15	**Design and estimate documentation for the construction and modernization of transport facilities**	The discipline is aimed at studying the functional and operational requirements of regulatory and legislative acts and documents, design output data. The procedure for the development, formation, and acceptance of the quality assessment of design decisions. Development and execution of the original design and estimate documentation. Legislative aspects of working with design and estimate documentation in the construction and modernization of transport facilities.	5					+				+	+

		General information about design and survey work, estimated documentation and investment efficiency.											
16	**Construction of transport facilities in special conditions**	The discipline studies modern methods of geotechnical design of objects of transport construction of transport structures erected on subsident, weak water-saturated clay, bulk, alluvial, swelling, saline, heaving, fractured rocky and eluvial soils. Taking into account the peculiarities of the construction of foundations and foundations on specific soils, the issues of construction in the quarried and moonlit territories, as well as in seismic areas, are outlined.	5							+	+		
17	**Maintenance and repair of transport facilities**	The purpose of studying the discipline is to form professional knowledge and necessary practical skills. The objective of this course is to outline the basics of reconstruction, repair and maintenance of transport structures; to acquire knowledge and skills in the field of technological design and direct work on the reconstruction of transport structures using modern materials, continuous change and grinding of rails, maintenance and average, current, major repairs of highways and airfields, bridges, pipes, tunnels and subways.	5				+			+	+	+	
18	**Production management**	The discipline is aimed at the basics of rational planning and design of construction, the project of organization of construction and	5					+				+	+

		production of works, organization of in-line construction, modeling of construction production, tasks of technical rationing. Provides knowledge, skills and abilities that are the presentation of the basics of modern rational organization of transport construction, the method of current and operational planning and management of transport construction, issues of modeling and computer-aided design of construction organization.											
19	**Risk management**	The discipline studies the features of risk management, as well as the economic foundations of managing their various types to reduce financial losses and ensure the conditions for the successful functioning of the company. It is aimed at risk management of companies and budget organizations in transport construction: general trends and conceptual issues. The organization of risk management in the corporate environment, the characteristics of the process and the financial aspect of risk management in companies and budget organizations.	5					+				+	+
20	**Strengthening the infrastructure of transport facilities**	The discipline studies deeper concepts about the infrastructure of transport facilities, namely motor transport, rail transport, water transport, pipeline transport, Modern types of transport facilities and methods of their maintenance, necessary for production, design, scientific and operational	5							+	+	+	

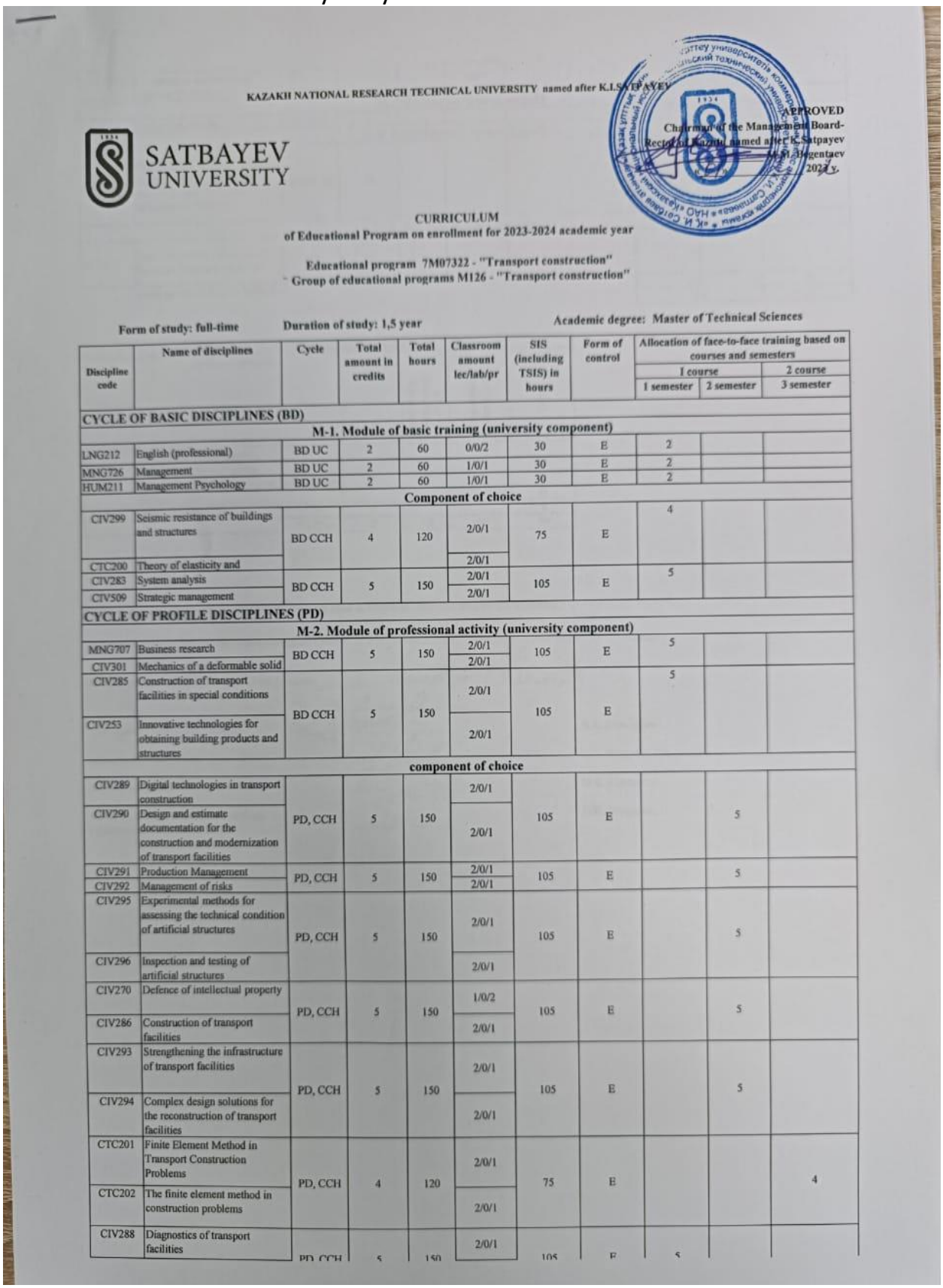
		organizations, to increase the service life of transport facilities, increase the carrying capacity of transport networks, all this requires the reconstruction of existing structures.											
21	**Construction of transport facilities**	The discipline is aimed at studying the basics of artificial structures, railway tracks, highways and airfields, the regulatory framework in the field of transport construction, approaches to the design of urban streets and roads, types of urban artificial structures and the scope of their application. Execution of engineering calculations related to the design of urban engineering structures, justification of the choice of a transport structure option in order to maximize the efficiency of the organization of railway and road transport.	5							+	+	+	
22	**Digital technologies in transport construction**	The discipline is aimed at studying the essence, principles and direction of digital activity of organizations (enterprises). Information policy of the Republic of Kazakhstan. The State Program "Digital Kazakhstan". State management of digital development. Legislative regulation in the field of digital technologies in the Republic of Kazakhstan. Information security. Principles of construction of digital measuring devices. Digital technologies used in the transport and communication industries. Application of digital technologies in transport construction.	5					+				+	+

23	**Experimental methods for assessing the technical condition of artificial structures**	The discipline is aimed at studying methods for assessing the bearing and operational capacity, durability, rigidity, crack resistance, tasks and possibilities of experimental methods for assessing the technical condition of artificial structures on railways and highways, oil and gas industry. Classification of experimental diagnostic methods for artificial structures, structural elements and their models. Features of the tasks to be solved. General requirements for test control methods and concepts of structural modeling and their operation.	5				+			+	+	+	
24	**Finite element method in transport construction problems**	Training in the theoretical and practical fundamentals of the finite element method (FEM) and the use of modern software systems that implement FEM in the design of transport structures. Teaching undergraduates the skills to independently improve their knowledge and deepen their practical experience in the application of the finite element method for the design of transport structures	4								+	+	
25	**Finite element method in construction problems**	Discipline is an elective component. Goals and objectives of the discipline: study and practical development of the theory of numerical methods for calculating building	4								+	+	

		structures, which form the basis of modern computer systems and application programs used to develop optimal solutions to design problems. The discipline studies numerical methods of linear algebra, numerical methods for solving differential equations with initial and boundary conditions, and the use of numerical methods in solving specific technical problems on a computer											

5. Working curriculum of the educational program

1.1. Duration of study 1.5 years



KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY named after K.I.SATPAYEV

SATBAYEV UNIVERSITY

APPROVED
Chairman of the Management Board-
Rector of Kazgtu named after K.Satpayev
M.K. Ulgentaev
2023 y.

CURRICULUM
of Educational Program on enrollment for 2023-2024 academic year

Educational program 7M07322 - "Transport construction"
Group of educational programs M126 - "Transport construction"

Form of study: full-time Duration of study: 1,5 year Academic degree: Master of Technical Sciences

Discipline code	Name of disciplines	Cycle	Total amount in credits	Total hours	Classroom amount lec/lab/pr	SIS (including TSIS) in hours	Form of control	Allocation of face-to-face training based on courses and semesters		
								I course		2 course
								1 semester	2 semester	3 semester
CYCLE OF BASIC DISCIPLINES (BD)										
M-1. Module of basic training (university component)										
LNG212	English (professional)	BD UC	2	60	0/0/2	30	E	2		
MNG726	Management	BD UC	2	60	1/0/1	30	E	2		
HUM211	Management Psychology	BD UC	2	60	1/0/1	30	E	2		
Component of choice										
CIV299	Seismic resistance of buildings and structures	BD CCH	4	120	2/0/1	75	E	4		
CTC200	Theory of elasticity and				2/0/1					
CIV283	System analysis	BD CCH	5	150	2/0/1	105	E	5		
CIV509	Strategic management				2/0/1					
CYCLE OF PROFILE DISCIPLINES (PD)										
M-2. Module of professional activity (university component)										
MNG707	Business research	BD CCH	5	150	2/0/1	105	E	5		
CIV301	Mechanics of a deformable solid				2/0/1					
CIV285	Construction of transport facilities in special conditions	BD CCH	5	150	2/0/1	105	E	5		
CIV253	Innovative technologies for obtaining building products and structures				2/0/1					
component of choice										
CIV289	Digital technologies in transport construction	PD, CCH	5	150	2/0/1	105	E		5	
CIV290	Design and estimate documentation for the construction and modernization of transport facilities				2/0/1					
CIV291	Production Management	PD, CCH	5	150	2/0/1	105	E		5	
CIV292	Management of risks				2/0/1					
CIV295	Experimental methods for assessing the technical condition of artificial structures	PD, CCH	5	150	2/0/1	105	E		5	
CIV296	Inspection and testing of artificial structures				2/0/1					
CIV270	Defence of intellectual property	PD, CCH	5	150	1/0/2	105	E		5	
CIV286	Construction of transport facilities				2/0/1					
CIV293	Strengthening the infrastructure of transport facilities	PD, CCH	5	150	2/0/1	105	E		5	
CIV294	Complex design solutions for the reconstruction of transport facilities				2/0/1					
CTC201	Finite Element Method in Transport Construction Problems	PD, CCH	4	120	2/0/1	75	E			4
CTC202	The finite element method in construction problems				2/0/1					
CIV288	Diagnostics of transport facilities	PD, CCH	5	150	2/0/1	105	E	5		

CIV287	Maintenance and repair of transport facilities	PD, UC	5	150	2/0/1	165	2	5		
M-3. Practice-oriented module										
AAP253	Production practice	PD, UC	5						5	
M-4. Experimental research module										
AAP249	Experimental research work of a master's student, including internship and implementation of a master's project	ERWM UC	18							18
M-5. Module of final attestation										
ECA213	Registration and protection of the master's project (RaPMP)	FA	8							8
Total based on UNIVERSITY:								25	35	30
								60		**30**

Number of credits for the entire period of study					
Cycle code	Cycles of disciplines	Credits			
			university component (UC)	component of choice (CCH)	Total
BD	Cycle of basic disciplines		6	9	15
PD	Cycle of profile disciplines		9	40	49
	Total for theoretical training:	***0***	***15***	***49***	***64***
	ERWM				***18***
FA	Final attestation	8			8
	TOTAL:	**8**	**15**	**49**	**90**

Decision of the Academic Council of Kazntu named after K.Satpayev. Protocol № 3 от 27.10.2022 y.

Decision of the Educational and Methodological Council of Kazntu named after K.Satpayev. Protocol № 2 от 21.10.2022 y.

Decision of the Academic Council of the Institute_____. Protocol № 2 от "4" 10 2022 y.

Vice-Rector for Academic Affairs	**B.A. Zhautikov**
Institute Director	**B.U. Kuspangaliev**
Department Head	**D.A. Akhmetov**
Specialty Council representative from employers	**D.K. Nusupov**

EXPERT OPINION

For educational programs 7M07320 – "Transport construction", 7M07321 – "Transport construction", 7M07322 – "Transport construction".

Submitted for review for educational programs 7M07320 – "Transport construction", 7M07321 – "Transport construction", 7M07322 – "Transport construction" were developed by the teaching staff of the Department "Construction and Building Materials", Institute of Architecture and Construction, NAO "Kazakh National Technical University named after K.I.Satpayev" - assoc. professor SiSM Akhmetov D.A., assoc. professor Uskembayeva B.O., professor Shayakhmetov S.B.

The developed educational programs include the basic rules and regulations for the scientific, pedagogical and specialized direction of training of masters 7M07320 - "Transport construction", 7M07321 – "Transport construction", 7M07322 – "Transport construction", a list of regulatory documents, expected competencies of students based on the results of full development of 2-year, 1.5-year and 1-year cycle, working curriculum.

According to the educational programs, the curricula for the modular training system of the directions 7M07320 – "Transport construction", 7M07321 – "Transport construction", 7M07322 – "Transport construction". All disciplines included in the curriculum are evenly distributed over semesters, the logical sequence of studying disciplines is observed.

Summing up, it can be concluded that the considered educational programs, the catalog of elective disciplines and the working curriculum can be used to organize the educational process in the directions 7M07320 – "Transport construction", 7M07321 – "Transport construction", 7M07322 – "Transport construction", the development of the disciplines of the proposed modules contributes to the formation of a personality capable of critical analyze, evaluate and synthesize new complex ideas to solve the problems of construction of transport facilities.

Expert,
Candidate of Technical Sciences, head of the company
Geo Track LLP **D.K. Nusupov**