

Joint Stock Company «Academy of Logistics and Transport»



IAPPROVED
decision of US ALT from
«30» March 2023 (Protocol № 13)
President-Rector
Amirgalieva S.N.

EDUCATIONAL PROGRAM

Name: «7M07345 – Transport construction (profile 1.5 years)»

Level of preparation: master`s degree

Code and classification of areas of training: 7M073 – Architecture and construction

Code and group of educational programs: M126 – Transport construction

Registration date in the Register: 24.05.2021

Registration number: 7M07300155

Almaty, 2023

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1. INFORMATION ABOUT REVIEW, AGREEMENT AND APPROVAL OF THE PROGRAM, DEVELOPERS, EXPERTS AND REVIEWERS

1 DEVELOPED:

Ph.D., Ph. D., Associate Professor of ALaT
(job title)


(signature)

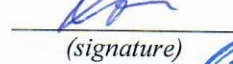
Bondar I.S.
(FULL NAME.)

Doctor of Technical Sciences, Professor
(job title)


(signature)

Makhmetova N.M.
(FULL NAME.)

Ph.D., professor ALaT
(job title)


(signature)

Kvashnin M.Ya.
(FULL NAME.)

V.s.s., Doctor of Technical Sciences, Professor of JSC "KazDorNII"
(job title)


(signature)

Zharkarov A.A.
(FULL NAME.)

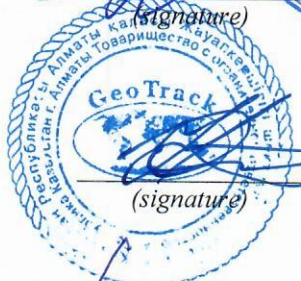
2nd year master's student, group MN-ITI-21-1
(job title)


(signature)

Konysbai A.D.
(FULL NAME.)

2 EXPERTS:

Ph.D., Director of LLP "GEO TRACK"
(job title)


(signature)

Nusupov D.K.
(FULL NAME.)

Deputy director of the limited liability partnership "GEO TRACK"
(job title)


(signature)

Masanov T.K.
(FULL NAME.)

3 REVIEWER:

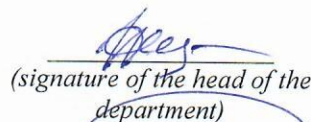
"Kazakh National research technical University named after K.I. Satpayev" Professor of the Department of Systems and Systems
Doctor of Technical Sciences
(job title)


(signature)

Shayakhmetov S.B.
(FULL NAME.)

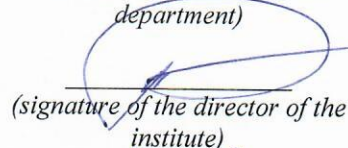
4 REVIEWED AND RECOMMENDED:

Meeting of the AC (department of SI) Protocol №., "6" 03/15/2023


(signature of the head of the department)

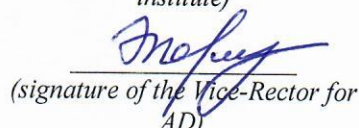
Ismagulova S.O.
(FULL NAME.)

KOC-UMB meeting Protocol №., "7" 15.03. 2023


(signature of the director of the institute)

Chigambaev T.O.
(FULL NAME.)

UMC meeting Protocol №., "4a" March 29, 2023


(signature of the Vice-Rector for AD)

Zharmagambetova M.S.
(FULL NAME.)

5 APPROVED by decision of the Academic Council dated March 30, 2023 No. 13

6 INTRODUCED 06.06.2023

2. REGULATORY REFERENCES

The educational program is developed on the basis of the following regulations and professional standards:

1. Law of the Republic of Kazakhstan «On Education» dated July 27, 2007 №. 319-III (as amended and supplemented as of March 27, 2023).
2. National qualifications framework, approved by the protocol of March 16, 2016 by the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations .
3. Industry qualifications framework for the field of «Education», approved by the Minutes of the meeting of the industry commission of the Ministry of Education and Science of the Republic of Kazakhstan on social partnership and regulation of social and labor relations in the field of education and science dated November 27, 2019 № 3.
4. State compulsory standard of higher education (Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated February 20, 2023 № 66).
5. Qualification reference book for 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 August 12, 2022 № 309.
6. Rules for organizing the educational process on credit technology of education in organizations of higher and (or) postgraduate education, approved by Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan № 152 dated April 20, 2011 (with additions and changes dated April 4, 2023 №145).
7. Classifier of areas of training for personnel with higher and postgraduate education, approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018 № 569 (with amendments and additions as of June 5, 2020).
8. Algorithm for inclusion and exclusion of educational programs in the Register of educational programs of higher and postgraduate education, approved by Order of the Minister of Education and Science of the Republic of Kazakhstan dated December 4, 2018 № 665 (with additions and changes as of December 23, 2020 № 536).
9. RI-ALT-33 «Regulations on the procedure for developing an educational program for higher and postgraduate education».
10. Atlas of new professions: «Highway hybridizer»

3.Educational program passport

№	Field name	Note
1	Registration number	7M07300155
2	Code and classification of field of education	7M07 Engineering, manufacturing and construction industries
3	Code and classification of areas of training	7M073 – Architecture and construction
4	Code and group of educational programs	M126 – Transport construction
5	Name of educational program	7M07345 – Transport construction
6	Type of OP	New
7	Purpose of the OP	Training of highly qualified competent professional specialists, as well as researchers in the transport and communications complex, development of organizational, managerial, analytical, experimental and research competencies in the areas of transport systems of production for the design, construction, operation, maintenance and repair of transport facilities.
8	ISCED level	7
9	Level according to NQF	7
10	ORK level	7
11	Distinctive features of the OP	No
	Partner university (SOP)	-
	Partner university (DDOP)	-
12	Form of study	Full-time
13	Language of instruction	Kazakh, Russian
14	Volume of loans	90
15	Academic degree awarded	Master of Engineering and Technology in educational program 7M07345 – Transport construction
16	Availability of an annex to the license for the direction of personnel training	KZ12LAA00025205 (011)
17	Availability of EP accreditation	
	Name of accreditation body	
	Validity period of accreditation	

4. COMPETENCY MODEL OF THE GRADUATE

Objectives of the educational program :

1. Promoting the development of the graduate's ability to:
 - 1) demonstrate developmental knowledge and understanding acquired at the higher education level that provides the basis or opportunity for the original development or application of ideas;
 - 2) apply knowledge, understanding, and problem-solving ability to new or unfamiliar situations within the contexts and frameworks of broader (or interdisciplinary) fields related to the field of study;
 - 3) integrate knowledge, cope with complexity, and make judgments based on incomplete or limited information, taking into account ethical and social responsibility for the application of this judgment and knowledge;
 - 4) clearly and clearly communicate your conclusions and knowledge and their rationale to specialists and non-specialists;
2. Promoting the formation of graduates' readiness to:
 - 1) develop design documentation for the creation and modernization of railways, highways, transport and oil and gas structures;
 - 2) perform calculation and design work on the creation and modernization of the transport complex of the Republic of Kazakhstan;
 - 3) develop technical documentation and methodological materials, proposals and measures for the creation and modernization of the transport complex.
 - 4) conduct a technical and economic analysis, a comprehensive justification of decisions made and implemented in the field of operation and repair of railways, bridges, tunnels and subways.
 - 5) apply the results in practice, strive for self-development, improve your qualifications and skills.
 - 6) to the economical and safe use of natural resources, energy and materials during the operation and repair of railways, bridges, tunnels and subways

Learning outcomes:

LO1 – Explore the results of the methodology for operational development and research in the state, Russian and foreign languages in oral and written forms.

LO2 – Make organizational and management decisions using management and marketing methods, taking into account the psychological characteristics of society.

LO3 – Compare SMART technologies used for the prospects of transport development when introducing information technologies, implementing digital transformation strategies in the production process.

LO4 – Analyze existing concepts, theories and approaches in diagnosing transport infrastructure objects using the mathematical apparatus of the finite element method to assess the technical condition of transport structures.

LO5 – Evaluate feasibility studies and the choice of types of structures for transport structures, modern methods of design and calculation of transport structures, criteria for the appointment of complexes for routine maintenance, major repairs and reconstruction of transport infrastructure facilities.

LO6 – Develop regulatory and technical documents of the Republic of Kazakhstan necessary for working with design and estimate documentation in the transport construction industry, algorithms for assessing, forming and making design decisions.

LO7 – Select information and analytical automated systems during the operation of transport facilities of various enterprises based on the principles of lean production.

LO8 – Analyze the technical condition of transport infrastructure facilities based on the results of surveys and tests, calculations of carrying capacity, load and impact, bearing capacity, deformations and displacements, technical and economic indicators, proposals and measures for effective and safe diagnostic methods.

Area of professional activity: areas of science and technology related to railway transport and transport infrastructure engineering

Objects of professional activity:

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

transport and subways, as well as industrial transport;

– Organizations and enterprises of the transport industry in the field of management, operation, maintenance of railways, urban rails – Organizations and enterprises of the transport industry in the field of materials processing technologies for maintenance, urban rail transport, subways and industrial transport;

Types of professional activities:

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

Functions of professional activity:

1) management activities, which involve the creation of a strategy for the functioning and development of industry structures, the organization of conditions;

2) preparation, modernization of infrastructure facilities of backbone networks and control systems.

3) analysis and development of solutions to improve technological processes, development of new approaches, use of various methods;

4) solving research and design problems related to increasing the efficiency of managed processes.

List of specialist positions:

- first head of the production organization (enterprise),
- deputy head of a production organization (enterprise),
- chief engineer of a production organization (enterprise),
- head of a structural unit of a production organization (enterprise),
- deputy head of a structural unit of a production organization (enterprise),
- manager, engineer and technical worker, head of the laboratory.

Professional certificates received upon completion of training: not provided.

Professional certificates received upon completion of training : not provided

Requirements for previous level of education: higher education (bachelor's degree).
educational program includes one type of internship:

- Internship

Experimental research work of a master's student (EIRM)

Planning of EIRM in weeks is determined based on the standard work time of the master's student during the week. The number of credits allocated for the implementation of

EIRM in a specific academic period is determined by the working curriculum of the professional educational program.

EIRM should:

- 1) correspond to the profile of the master's educational program in which the master's project is being carried out and defended;
- 2) be based on modern achievements of science, technology and production and contain specific practical recommendations, independent solutions to management problems;
- 3) be carried out using advanced information technologies;
- 4) contain experimental and research (methodological, practical) sections on the main protected provisions.

Within the framework of the EIRM, the individual work plan of a master's student for familiarization with innovative technologies and new types of production provides for mandatory scientific internship in scientific organizations and (or) organizations of relevant industries or fields of activity.

EIRM is planned in parallel with other types of educational work or in a separate period.

The results of the experimental research work at the end of each period of its completion are documented by the undergraduate in the form of a report.

The final result of EIRM is a master's project.

The goal of EIRM is to obtain new results that are important for theory and practice in a given subject area, as well as to master theoretical and experimental methods for studying objects (processes, effects, phenomena, structures, projects) in a given subject area.

The objectives of the EIRM are:

- organization of training for master's students in the theory and practice of conducting experimental research;
- development of creative thinking and independence in the master's student, deepening and consolidating the acquired theoretical and practical knowledge;
- identifying the most gifted and talented undergraduates, using their creative and intellectual potential to solve pressing problems in science and technology;
- developing a master's student's interest in scientific creativity, teaching them methods and ways to independently solve applied problems.

Scientific internship is carried out for the purpose of:

- fulfilling the objectives of the master's thesis;
- familiarization with innovative technologies and new types of production;
- familiarization with the latest theoretical, methodological and technological achievements of domestic and foreign science;
- familiarization with modern methods of scientific research, processing and interpretation of experimental data;

consolidation of theoretical knowledge acquired in the process of learning to acquire practical skills, competencies and professional experience in the specialty being trained, as well as mastering advanced foreign experience.

Requirements for EIRM:

- 1) corresponds to the profile of the master's educational program, according to which the master's project is being carried out and defended;
- 2) is based on modern achievements of science, technology and production and contains specific practical recommendations, independent solutions to management problems;
- 3) is carried out using advanced information technologies;
- 4) contains experimental and research (methodological, practical) sections on the main protected provisions.

The department in which the master's program is implemented determines special requirements for the preparation of master's students in the research part of the program.

Special requirements include:

- knowledge of modern issues of this branch of knowledge;
- the presence of specific specific knowledge on the scientific problem studied by the undergraduate;
- ability to practically carry out scientific research, experimental work in one or another scientific field related to the master's program (master's project);

ability to work with specific software products and specific Internet resources.

Scientific supervisors are obliged to ensure high-quality organization of EIRM and its methodological formulation.

The main content of the EIRM is reflected in the individual work plan of the master's student.

Contents of EIRM

Experimental research work at the department can be carried out in the following forms:

- fulfillment of tasks of the scientific supervisor in accordance with the approved plan of experimental research work;
- participation in scientific and practical seminars, theoretical seminars (on the topic of research), as well as in the scientific work of the department;
- speaking at conferences of young scientists;
- preparation and publication of abstracts of reports, scientific articles;
- preparation and defense of scientific reports on the areas of ongoing scientific research;
- participation in a real research project carried out at the department within the framework of budgetary and extra-budgetary research programs (or within the framework of a received grant), or in a partner organization for the implementation of master's training;
- preparation and defense of a master's project.

The list of forms of experimental research work at the department for master's students in specialized studies can be specified and supplemented, depending on the specifics of the master's program.

EIRM results

In addition to the above forms, the result of experimental research work is:

in the first semester:

- the topic of the project approved by the Academic Council of the Academy;
- developed and approved individual work plan for the master's student, indicating the main activities and deadlines for their implementation;
- determination of goals, objectives, scope, subject of research;

in the second semester:

- study and collection of practical material for the master's project, including the development of a methodology for data collection, methods for processing results, assessing their reliability;
- completion of at least 50% of the volume of theoretical and experimental work on the research topic;
- implementation of other activities provided for by the individual work plan of the master's student;

in the third semester:

- processing and analysis of factual material for the master's project, including assessment of its sufficiency to complete the project, development and construction of graphic images and other illustrations on the research topic;
- fulfillment of 100% of the theoretical and experimental work on the research topic;
- publication of at least 1 publication and/or 1 speech at a scientific and practical conference;
- implementation of other activities provided for by the individual work plan of the master's student;

- passing a semester certification based on the results of the EIRM;
- preparation of the final text of the master's project.

The final certification of the master's student is carried out in the form of writing and defending a master's thesis.

The purpose of the final certification of a master's student is to assess the master's profile level, developed professional and managerial competencies, readiness to independently perform professional tasks and the compliance of his preparation with the requirements of the master's educational program.

Students who have completed the educational process in accordance with the requirements of the educational program, working curriculum and working educational programs, as well as those who have passed a preliminary defense (extended meeting) based on the results of dissertation research, are allowed to take part in the final certification.

5. MATRIX FOR CORRELATION OF LEARNING RESULTS IN THE EDUCATIONAL PROGRAM WITH ACADEMIC DISCIPLINES/MODULES

№	Name of the discipline	Number of credits	Matrix for correlating learning outcomes in the educational program with academic disciplines							
			LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
1	2	3	4	5	6	7	8	9	10	11
1	Management	2	+							
2	Foreign language (professional)	2		+						
3	Psychology of management	2	+							
4	Lean	9			+					
5	SMART technologies in transport	9				+				
6	Finite element method in transport construction problems	9					+			
7	Operational Development Methodology	6		+			+			
8	Internship	7				+		+	+	
9	Diagnostics and monitoring of transport facilities	9						+		
10	Assessment of the technical condition of transport structures	9						+	+	
11	Construction of transport facilities	6						+		
12	Maintenance and repair of transport facilities	6						+	+	
13	Design and estimate work in transport construction	6								+
14	Design and estimate documentation of transport structures	6								+
15	Innovative technologies in transport construction	6			+	+				
16	Digitalization of transport infrastructure	6				+		+		
17	Experimental and research Master's student's work including internship and master's thesis	18								
18	Registration and protection master's thesis	8	+	+	+	+	+	+	+	+

6. STRUCTURE OF THE MASTER'S EDUCATIONAL PROGRAM IN THE PROFILE DIRECTION

№	Name of discipline cycles	Total labor intensity	
		in academic hours	in academic credits
1.	Theoretical training	1920	64
1.1	Cycle of basic disciplines (BD)	450	15
1)	University component (VC):	180	6
	Management	60	2
	Foreign language (professional)	60	2
	Psychology of management	60	2
2)	Component of choice (CV)	270	9
1.2	Cycle of major disciplines (PD)	1470	49
1)	University component	660	22
2)	Component of choice	810	27
2.	Experimental research work of a master's student		
1)	Experimental research work of a master's student , including internship and completion of a master's thesis	540	18
3	Additional types of training (ADE)	-	-
4	Final certification (IA)	240	8
1)	Preparation and defense of a master's thesis (OiZMD)	240	8
	Total	2700	90

7. WORKING CURRICULUM FOR THE WHOLE TERM OF STUDY

JSC "Academy of Logistics and Transport"

CURRICULUM

Form of study: full-time

Training area:
7M073-Architecture and Construction

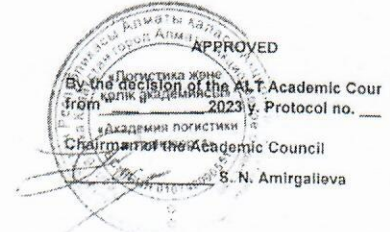
Duration of training: 1.5 years

Group of educational programs:
M126-Transport construction

Name of the educational program:
7M07345-Transport construction

Admission: 2023

Degree: Master of Engineering and Technology




№	Discipline code	Name of cycles and disciplines	Total labor intensity		Control form, semester		Amount of training load, contact hours						Distribution by semester			Assignment to the department	
			In academic hours	in academic credits	Exam	KP (KR)	Total hours	Classroom settings			SRO		1st course				2nd course
								lectures	practical features	laboratory data	SROP	SRO	1 sem.	2 sem.	3 sem.		15 weeks
4	5	6	7	8	9	10	11	12	13	14	15	16	17				
CYCLE OF BASIC DISCIPLINES (DB):																	
1.1.	University component:		180	6	3		180	23	22	0	24	111	4	2	0		
1.1.1.	23-0-M-VK-Meng	Management	60	2	1		60	15			8	37	2			LMT	
1.1.2.	23-0-M-VK-IYa(P)	Foreign language (professional)	60	2	1		60		15		8	37	2			YAP	
1.1.3.	23-0-M-VK-PU	Management psychology	60	2	2		60	8	7		8	37		2		SRS:IV	
1.2.	Component of your choice:		270	9	1	0	270	45	45	0	8	172	0	9	0		
1.2.2.	23-0-M-KV-BP	Lean manufacturing	270	9	2		270	45	45		8	172		9		ps	
	23-0-M-KV-SMARTTT	SMART technologies in transport															
TOTAL by DB cycle:			450	15	4	0	450	68	67	0	32	283	4	11	0		
CYCLE OF PROFILE DISCIPLINES (PD):																	
2.1.	University component:		660	22	3		660	75	75	0	16	284	9	6	7		
2.1.1.	23-45/46-M-VK-MKEZTS	Finite element method in transport construction problems	270	9	1		270	45	45		6	172	9			si	
2.1.2.	23-0-M-VK-MER	Operational development methodology	180	6	2		180	30	30		8	112		6		OY	
2.1.3.	23-0-M-VK-PPr	Production practice	210	7	3		210								7	si	
2.2.	Component of your choice:		810	27	4	0	810	135	135	0	32	508	15	12	0		
2.2.1.	23-45/46-M-KV-DMTS	Diagnostics and monitoring of transport structures	270	9	1		270	45	45		8	172	9			si	
	23-45/46-M-KV-OTSTS	Assessment of the technical condition of transport structures															
2.2.2.	23-45/46-M-KV-UTS	Construction of transport structures	180	6	1		180	30	30		8	112	6			si	
	23-45/46-M-KV-SRTS	Maintenance and repair of transport structures															
2.2.3.	23-0-M-KV-PSDeloTS	Design and estimate work in transport construction	180	6	2		180	30	30		8	112		6		si	
	23-0-M-KV-PSDTS	Design and estimate documentation of transport structures															

2.2.4.	23-0-M-KV-ITTS	Innovative technologies in transport construction	180	6	2		180	30	30		8	112		6		si
	23-0-M-KV-TsIsT	Digitalization of transport infrastructure														
TOTAL for the PD cycle:			1470	49	7	0	1470	210	210	0	48	792	24	18	7	
TOTAL FOR THE THEORETICAL COURSE OF STUDY (MSW):			1920	64	11	0	1920	278	277	0	80	1075	28	29	7	
3.	23-0-M.-VK-EIRM	Experimental research work of a master's student, including internships and master's projects	540	18									2	1	15	si
4.	23-0-M.-VK-OZMP	Design and defense of a master's project	240	8											8	si
TOTAL FOR THE ENTIRE TRAINING PERIOD:			2700	90			1920	278	277	0	80	1075	30	30	30	
ADDITIONAL TYPES OF TRAINING (DVE):																
5.	Additional types of training															

AGREED:

Vice-Rector for AD  Zharmagambetova M. S.

DAPQ Director  Lipskaya M. A.

DEVELOPED BY:

Director of the TE Institute"  Chigambaev T. O.

Head of the Department "CE"  Ismagulova S. O.

8. CATALOG OF DISCIPLINES OF THE UNIVERSITY COMPONENT

EDUCATIONAL PROGRAM

7M07345 – Transport construction

Level of education: Master's profile

degree Duration of study: 1.5 years

Year of admission: 2023

Cycle	Component	Name of the discipline	Total labor intensity		Semester	Learning outcomes	Brief description of the discipline	Prerequisites	Postrequisites
			academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10
DB	VK	Management	60	2	1	LO1	The purpose of the study is to generate knowledge about the organization as an object of management, to consider situational and process approaches in management, engineering and reengineering of business processes, to explore the theory and practice of management, the role functions of the manager and subordinates, to study ways of planning a strategy for management activities, stimulating performers for highly productive work, organization effective control, etc., provide practical skills in developing your own management style and tactics for making management decisions.	of economics and business	Berezh - livee production quality
DB	VK	Foreign language (professional)	60	2	1	LO2	Formation of foreign language communicative competence in the field of professional communication, systematization of skills and abilities necessary for undergraduates for the further development of scientific linguistic, discursive and sociocultural competencies, expansion of knowledge in a foreign language in professional vocabulary, terminology and their subsequent application in research activities at the international level.	Foreign language	Psychology of management
DB	VK	Psychology of management	60	2	2	LO1	Aimed at studying the theoretical and methodological foundations of management psychology, the main socio-psychological problems of management and ways to solve them, familiarization with methods for studying important socio-psychological characteristics of the individual and the team, professional, interpersonal and internal personal problems using psychology management.	Management, Foreign language (professional)	Experimental research work master's degree
PD	VK	Finite element method in transport	270	9	1	LO5	Studies the theoretical foundations of constructing computational finite element models of transport infrastructure using the basic	Structural mechanics	Experimental

									principles of the theory of elasticity, plasticity, mechanics of a deformable solid and numerical analysis, basic techniques for constructing element matrices, algorithms for solving stationary, dynamic and physically nonlinear problems in order to develop competencies in the field of application finite element analysis for modeling complex engineering problems.						research work master's degree
PD	VK	Operational Development Methodology	180	6	2	LO2 LO5			Formation of master's students' skills and abilities in the field of development methodology in the form of an experiment. The concepts of experimental research methodology, typology of documentary sources, scientific and technical research, analytical and probabilistic-statistical research methods, similarity and modeling in operational research, the use of computers in experimental research, classification and objectives of an experiment, experimental planning, assessment of the adequacy of theoretical solutions, design results of scientific work and implementation of experimental research.	Scientific research methodology				Experimental research work master's degree	
PD	VK	Internship	210	7	3	LO6 LO7 LO8			Consolidation of theoretical knowledge acquired during the learning process; obtaining skills in the practical use of professional knowledge acquired during theoretical training; training in skills for solving practical and management problems; familiarization with the specifics of a bachelor's professional activity in a specific industry; formation of a professional position of a specialist, style of behavior, development of professional ethics.	Diagnostics of transport infrastructure facilities				Experimental research work master's degree	
PD	VK	Experimental research work of a master's student	540	18	1,2,3	LO4 LO6 LO7 LO8			Formed professional and managerial competencies, readiness to independently perform professional tasks and compliance of its preparation with the requirements of the master's educational program	Construction of transport infrastructure facilities				Experimental research work master's degree	
PD	VK	FINAL EXAMINATION	241	8	3	LO4 LO6 LO7 LO8			The goals of the thesis are to identify the degree to which the bachelor has mastered the content of the educational program, test his readiness for independent activities in the area of the educational program, consolidate and deepen practical work skills. A comprehensive exam is also required.	Monitoring the technical condition of transport infrastructure facilities				Experimental research work master's degree	
Total			840		28										

9. CATALOG OF CHOICE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM

7M07345 – Transport construction

Level of education: Master's profile

Duration of study: 1.5 years

Admission year: 2023

Cycle	Component	Name of the discipline	Total labor intensity		Semester	Learning outcomes	Brief description of the discipline	Prerequisites	Post-requisites
			academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10
DB	HF	Lean	270	9	2	LO3	Studies the basics of managing an organization based on the principles of lean production: minimizing all types of losses in the process of activity, achieving the maximum possible result in the shortest possible period of time, rational use of all types of resources, improving aspects of the organization's activities, involving employees in technological processes; formation of lean thinking among future managers, correlated with the ideas of the concepts of sustainable development and conscious consumption that are relevant to the modern world.	Ecology and life safety	Operational development methodology
		SMART technologies in transport				LO4	Intelligent technologies used in railway transport are reviewed and studied. The basic concepts of the current state and prospects for the development of railway transport infrastructure based on SMART technologies are described. Familiarization of students with and development of skills in assessing the improvement of operational safety of railway infrastructure facilities, taking into account the development of computer technologies, software and artificial intelligence.	Information no-communications-ion technologies	Design and estimate work in transport construction, Design and estimate documentation of transport structures
PD	HF	Diagnostics and monitoring of transport facilities	270	9	1	LO6	Studies the logical correspondence between the various requirements of regulatory literature when diagnosing transport infrastructure objects (calculation of carrying capacity, load and impact, bearing capacity, deformations and displacements, technical and economic indicators, development of inspection and testing programs, proposals and measures for effective and safe diagnostic methods) in order to make the most optimal decisions to assess their technical condition.	Digital diagnostics of construction sites	Innovative new technologies in transport construction, Digitalization of transport infrastructure

						Assessment of the technical condition of transport structures	LO6 LO7				It studies the fundamentals of analyzing the technical condition of transport infrastructure facilities based on the results of surveys, the development of methodological materials, proposals and activities on effective and safe methods of inspection and testing of transport infrastructure facilities, fundamental methods and methods of inspection and testing of artificial structures, necessary for the purpose of solving practical problems in assessment of their technical condition	Digital diagnostics of construction sites	Innovative technologies in transport construction, Digitalization of transport infrastructure
						Construction of transport facilities	LO6				Study of modern methods, methods and technical means of mechanization, mechanization and automation for the development of technological processes for complex complexes and individual types of work for the current maintenance and repair of transport infrastructure facilities, taking into account their technical, technological and operational characteristics and the feasibility study of capital investments and operational expenses.	Railway track construction	Design and estimate documentation of transport structures, Design and estimate work in transport construction
PD	HF		180	6	1	Maintenance and repair of transport facilities	LO6 LO7				Study of transport infrastructure objects for public and strategic official use by type of transport depending on various target functional purposes, classifications, types, technical and operational parameters, structural and technical and economic solutions, methods of design and calculation of structures of transport structures under various force influences, 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
PD	HF		180	6	2	Design and estimate work in transport construction	LO8				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, assessing the quality of design solutions and the development of design and estimate documentation with the preparation of design and estimate documentation, general information about design - survey work and estimate documentation for transport construction.	Construction of transport infrastructure facilities, Monitoring the technical condition of transport infrastructure facilities	Preparation and defense of a master's project

10. EXPERT OPINION

for the educational program «7M07345 - Transport Construction» Level of preparation: specialized master's degree (1.5 years)

Implementation of the educational program «7M07345 – Transport Construction» specialized master’s degree (1.5 years) carried out through a sequence of disciplines studied, with the establishment of specific tasks and target indicators. Interdisciplinary interaction is clearly visible, which consists in a complex connection between the content of individual academic disciplines, through which the internal unity of the specialist training program is achieved.

The curriculum of the educational program defines a list of all academic disciplines of the compulsory component and the elective component, the complexity of each academic discipline in credits, the sequence of their study, types of training sessions and forms of control. It is relevant to study issues of the environmental situation and ensure conditions for safe work at enterprises of the transport and operational complex of the infrastructure of transport facilities.

Educational trajectories are developed in accordance with the needs of the transport and communications industry and the infrastructure of transport facilities.

The goal of the educational program is relevant, formulated quite succinctly and combines learning outcomes. The description of the disciplines reflects their goals and content, as an indicator of the achievement of learning outcomes in a given educational program. Also, the educational program, developed on the basis of a professional standard, reflects the main labor functions in competencies and learning outcomes, and indicates the types of connections with employers: conducting guest lectures, lectures by leading top managers, the presence of branches of departments based on organizations.

Thus, the educational program «7M07345 - Transport Construction», a specialized master’s program (1.5 years) in the field of training «7M073 - Architecture and Construction», submitted for examination, fully complies with the requirements of the State Educational Standard, has a clear sequence in development, and meets the modern demands of the labor market , professional standards and can be implemented for training in the direction «7M073 - Architecture and Construction», group of educational programs: M126 - Transport Construction.

Expert:

Deputy Director
(job title)
«GEO TRACK» LLP
(place of work)



Masanov T.K.

11. REVIEWER'S CONCLUSION

REVIEW

for an educational program
«7M07345 – Transport construction» specialized master's degree (1.5 years) in the
direction of training «7M073 - Architecture and Construction», group of educational programs:
«M126 - Transport Construction».

The educational program «7M07345 - Transport Construction» specialized master's program (1.5 years) contains the following information: graduate qualifications, form and duration of study, direction and characteristics of graduates' activities, a complete list of competencies that a graduate should have as a result of mastering this educational program is provided.

The disciplines of the curriculum for the peer-reviewed educational program form the entire necessary list of general cultural and professional competencies provided for by the State Educational Standard for the relevant types of activities.

The curriculum of the educational program defines a list of all academic disciplines of the compulsory component and the elective component, the complexity of each academic discipline in credits, the sequence of their study, types of training sessions and forms of control. The catalog of elective disciplines, the Catalog of the intra-university component fully reflect the continuity of the disciplines: «Diagnostics and monitoring of transport structures», «Assessment of the technical condition of transport structures», «Design of transport structures», «Maintenance and repair of transport structures».

The sequence of studying disciplines is observed, disciplines necessary for production and technological process are included.

The content of the work programs of academic disciplines and practices allows us to conclude that it corresponds to the graduate's competency model.

The educational program provides professional and practical training for undergraduates in the form of practice. The content of practice programs testifies to their ability to form practical skills of students.

To develop the educational program, experienced teaching staff, leading representatives of the employer, and students were involved, and their requirements were taken into account when forming the disciplines of the professional cycle.

Conclusion:

In general, the reviewed educational program meets the basic requirements of the State Educational Standard, the national qualifications framework, the industry qualifications framework, professional standards, the Atlas of new professions and contributes to the formation of general cultural and professional competencies in the field of study «7M073 - Architecture and Construction», group of educational programs: «M126 - Transport construction».

Reviewer

**«Kazakh National
research technical
University named after K.I. Satpayev»
Professor of the Department
of Systems and Systems
Doctor of Technical Sciences**



Shayakhmetov S.B.

12. LETTERS OF RECOMMENDATION

Letterhead

**Recommendation
letter from employer**

GEO TRACK LLP

Dear Saltanat Nuradilovna!

Management of «GEO TRACK» LLP represented by Nusupov Jetebaya Kozhabekovich got acquainted with the content of the educational program «7M07345 - Transport Construction», a specialized master's program (1.5 years) in the field of preparation «7M073 - Architecture and Construction», a group of educational programs «M126 - Transport Construction» and made the following recommendations:

- include in the content of the educational program the following disciplines: with I T technologies,

- increase the number of hours allocated for conducting part of laboratory and practical classes at employers' bases in order to develop certain types of professional competencies;

- update the content of educational programs by including basic and core discipline modules in the cycle, reflecting modern innovative technologies in the transport and communications sector. It is proposed to include the following disciplines: «SMART technologies in transport», «Diagnostics and monitoring of transport structures», «Assessment of the technical condition of transport structures», «Innovative technologies in transport construction», «Digitalization of transport infrastructure».

- increase the number of hours allocated for practical training;

include disciplines:

- with IT competencies;

- relating to the organization of production and labor protection;

- disciplines on operation and repair of electrical equipment;

- economic and managerial nature;

- with software (AutoCAD , MIDAS Civil , Cosmos M);

- schedules of PPR, POS, TC, etc.

**Employer:
Director of GEO TRACK LLP**



Nusupov D.K.

(signature, date, seal)

13. REVIEW AND APPROVAL PROTOCOLS

Academy of Logistics and Transport

PROTOCOL № 6 (beginning of the formation of the OP)

Meetings

**Academic Committee for the Educational Program and Leading Teachers of the
Department of Civil Engineering**

Almaty

«15» 03 2023

Chairman: Ismagulova S.O.

Secretary: Zhadraev R.Zh.

Present : members of the Academic Committee, leading teaching staff of the department

Representatives from production : V.s.s., Doctor of Technical Sciences, Professor of «KazDorNII» JSC - Shalkarov A.A. Deputy Director of «GEO TRACK» LLP Masanov T.K., Director of «GEO TRACK» LLP Nusupov D.K.

Students: 2nd year master's student, group MN-ITI-21-1 Konysbay A.D.

AGENDA :

1. Consideration of the graduate competency model
2. Consideration of the possibility of including disciplines in QED and RUP

On the first question

SPEAKER : Head. Department Ismagulova S.O. proposed to consider the competency model of a graduate at 3 levels of education: bachelor's, master's, and doctorate.

The graduate competency model includes the following parts:

- The purpose and objectives of the educational program;
- Learning outcomes;
- Area, objects, types and functions of professional activity;
- List of positions in the educational program;
- Professional certificates received upon completion of training;
- Requirements for previous level of education.

SPEAKER : Senior Social Sciences , Doctor of Technical Sciences, Professor of «KazDorNII» JSC - A.A. Shalkarov, who proposed, due to the specifics of their organization, to reflect the following in the objects of professional activity: Modern innovative technologies in the transport and communications sector .

SPEAKED BY : Member of the department - Doctor of Technical Sciences, Poessor N. M. Makhmetova, who proposed to approve and after considering the competency model of the graduate , it was proposed to approve this Model for 3 levels of education.

DECIDED: to provide a competency model of a graduate at 3 levels of education: bachelor's, master's, doctoral studies for consideration and approval by the Council of the Institute of Transport Engineering.

On the second question

SPEAKER : Head of the department Ismagulova S.O. with a proposal to hear representatives of employers and students on the inclusion of new disciplines in the QED and RUP of admission for 2023.

SPEAKED BY: Director of «GEO TRACK» LLP Nusupov D.K.

Organizations are interested in specialists with a good level of training and knowledge in the field of design and construction of transport structures. We make proposals to include the following popular disciplines in the RUP: «SMART technologies in transport», «Diagnostics and monitoring of transport structures», «Assessment of the technical condition of transport structures», «Innovative technologies in transport construction», «Digitalization of transport infrastructure».

SPEAKER: 2nd year master's student, group MN-ITI-21-1 Konybay A.D.

We consider it necessary to include the following disciplines in the RUP: «SMART technologies in transport», «Digitalization of transport infrastructure», «Diagnostics and monitoring of transport facilities».

DECIDED:

1. Please take note of the information;
2. Take into account the suggestions and recommendations of employers and students;
3. Consider including the following disciplines in the RUP: «SMART technologies in transport», «Diagnostics and monitoring of transport structures», «Assessment of the technical condition of transport structures», «Innovative technologies in transport construction», «Digitalization of transport infrastructure», «Installation of transport structures», «Maintenance and repair of transport facilities».

Chairman:



Ismagulova S.O.

Secretary:



Zhadraev R.Zh.

Academy of Logistics and Transport
PROTOCOL № 7 (before approval of the OP on the CS)

Meetings of the COC UMB Institute of Transport Engineering

Almaty

March 15, 2023

Chairman: Chigambaev T.O.

Secretary: Utepova A.

Present : members of the UMB KOC, members of the Academic Committee

Representatives from production : V.s.s., Doctor of Technical Sciences, Professor of «KazDorNII» JSC - Shalkarov A.A. Deputy Director of «GEO TRACK» LLP Masanov T.K., Director of «GEO TRACK» LLP Nusupov D.K.

Students: 2nd year master's student, group MN-ITI-21-1 Konysbay A.D.

AGENDA :

1. Review of the Catalog of Elective Disciplines (CED), the Work Curriculum (WCU), passports of educational programs for bachelor's, master's and doctoral studies.

SPEAKER: Head . Department Ismagulova S.O. submitted (a) for consideration the QED, RUP of bachelor's, master's and doctoral studies.

At the department «Civil Engineering» a meeting was held with the participation of representatives of employers and students to discuss the structure and content of the educational program «7M07345 - Transport Construction» specialized master's degree (1.5 years) in the field of preparation «7M073 - Architecture and Construction», group of educational programs «M126 – Transport construction», Representatives of employers and students proposed a number of new relevant disciplines, which the department approved and included in the new QED and RUP.

DECIDED:

1. Please take note of the information;
2. Take into account all suggestions and recommendations of employers and representatives of student activists;
3. Submit KED, RUP and EP of bachelor's, master's and doctoral studies for consideration and approval by the Council of the Institute, the Academy's Board of Directors.

Chairman of the KOC UMB

Chigambaev T.O.

Secretary

Utepova A.

15. REGISTRATION SHEET OF CHANGES

No.	Section, paragraph document	Type of change (replace, cancel, add)	Number and date notices	Change made	
				date	Last name and initials, signature, position