Joint Stock Company «Academy of Logistics and Transport»

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

EDUCATIONAL PROGRAM

Name: «6B07321 – Construction of bridges, tunnels and subways»

Level of training: bachelor's degree

Code and classification of areas of training: 6B073 – Architecture and construction

Code and group of educational programs: B074 – Urban planning, construction work and civil engineering

Date of registration in the Register: 05/31/2021

Registration number: 6B07300166

Almaty, 2023

CONTENT

1 DEVELOPED:

Doctor of Technical Sciences, Academic Professor (jobtitle)	*(signature)*	*Khasenov S.S. (FULL NAME)*
Ph. D, Associate professor ALaT (position)	*(signature)*	*Bondar I.S. (FULL NAME)*
Doctor of Technical Sciences, Professor (position)	*(signature)*	*Makhmetova N.M. (FULL NAME)*
Ph.D., professor ALaT (position)	*(signature)*	*KvashninM.Ya. (FULL NAME)*
V.S.N., Doctor of Technical Sciences, Professor of «KazdorNII» JSC (position)	*(signature)*	*Shalkarov A.A. (FULL NAME)*
2nd year Master's, group MN-ITI-21-1 (position)	*(signature)*	*Konyasbai.A.D. (FULL NAME)*

2 EXPERTS:

Candidate of Technical Sciences, Director of «GEO TRACK» (position)	*(signature)*	*Nusupov D.K. (FULL NAME)*
Candidate of Technical Sciences, Director of «GEO TRACK» (position)	*(signature)*	*Masanov T.K. (FULL NAME)*

3 RECENSEE:

«Kazakh National Research Technical University K.I. Satpayev Kazakh National Research Technical University Professor of «SISM»department Doctor of Technical Sciences (position)	*(signature)*	*Shayakhmetov S.B.* (FULL NAME)

4 REVIEWED AND RECOMME:

Meeting of the AC (Chair of the SI Department) Protocol №, «6» 15.03.2023.	*(Signature of the head of the department)*	*Ismagulova S.O. (FULL NAME).*
Meeting COC-UMB Protocol№, «7» 15.03. 2023.	*(signed by the director of the institute)*	*Chigambaev T.O. (FULL NAME)*
Meeting UMS Protocol№, «40» 29.03.2023.	*(signature of the vice-rector for AD)*	*Zharmagambetova M.S. (FULL NAME)*

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

6 INTRODUCED 25.05.2023

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 No. 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: «Manager of innovations in construction».

3. Passport of the educational program

No.	Field name	Note
1	Registration number	*6B07300166*
2	Code and classification of field of education	*6B07 Engineering, manufacturing and construction industries*
3	Code and classification of areas of training	*6B073 Architecture and construction*
4	Code and group of educational programs	*B074- Urban planning, construction work and civil engineering*
5	Name of educational program	*6B07321 – Construction of bridges, tunnels and subways*
6	Type of OP	*New*
7	Purpose of the OP	*Training of competitive specialists with higher education who have the necessary theoretical knowledge and practical skills in the field of design, construction of bridges, tunnels and subways.*
8	ISCED level	*6 - Bachelor's degree*
9	Level according to NQF	*6 - Bachelor's degree*
10	ORK level	*6 - Bachelor's degree*
11	Distinctive features of the OP	*No*
	Partner university (SOP)	
	Partner university (DDOP)	
12	Form of study	*Full-time, full-time with the use of DOT*
13	Language of instruction	*Kazakh, Russian*
14	Volume of loans	*241*
15	Academic degree awarded	*Bachelor of Engineering and Technology in the educational program «6B07321 - Construction of bridges, tunnels and subways»*
16	Availability of an annex to the license for the direction of personnel training	*KZ12LAA00025205 (010)*
17	Availability of EP accreditation	
	Name of accreditation body	
	Validity period of accreditation	

4. Competency model of a graduate

Objectives of the educational program:

1. Formation of a personality capable of self-improvement and professional growth with versatile social, humanitarian, natural science, special and core knowledge and interests.

2. Formation of the ability to critically rethink the accumulated experience, change, if necessary, the profile of one's professional activity, awareness of the social significance of one's future profession, and having high motivation to perform professional activities.

3. Formation of the ability: to find a compromise between various requirements (cost, quality, safety and deadlines) during long-term and short-term planning and make optimal decisions in the field of design, construction and operation of transport facilities; carry out work in research organizations under the guidance of leading specialists; possess a culture of thinking.

4. Formation of the ability to: generalize, analyze and perceive information; setting a goal and choosing ways to achieve it.

5. Promoting the graduate's readiness to: perform calculation and design work; develop design and technical documentation; develop methodological materials, proposals and activities for the design, construction, operation and modernization of transport buildings and structures.

6. Formation of graduates' readiness to conduct technical and economic analysis, substantiate decisions made and implemented in the field of design, construction, operation and modernization of transport buildings and structures; applying the results in practice, striving for self-development and improving one's qualifications and skills.

7. Promoting the formation of graduates' readiness for the economical and safe use of natural resources, energy and materials in the design, construction, operation and modernization of transport buildings and structures.

Learning outcomes:

LO1-Develop ideological, civic and professional positions based on knowledge of social and humanitarian disciplines, moral values, healthy lifestyle, ability for interpersonal social and professional communication in the state, Russian and foreign languages.

LO2-Apply information and communication technologies, computer modeling, fundamentals of electronics in digital diagnostics of transport structures and solutions to applied engineering problems.

LO3- Use knowledge of physics, mathematics, theoretical and engineering mechanics when studying major disciplines and solving applied problems based on scientific research methods in the field of professional activity.

LO4- Select methods and methods of labor protection, environmental safety, analytical thinking on economic, social and humanitarian issues, anti-corruption culture and access to informed management decisions using Power BI.

LO5- Assess the reliability and durability of transport structures based on the principles and laws of engineering geology and geodesy, geoinformatics, soil mechanics, foundation engineering in the field of professional activity.

LO6- Formulate logistics planning of transport infrastructure, special operating rules based on the principles of resource conservation in the transport industry and methods of managing temporary resources.

LO7- Justify design solutions for transport structures using modern building materials and effective design diagrams of load-bearing structures when designing transport infrastructure facilities.

LO8-Demonstrate practical knowledge in choosing methods for calculating structures of bridges and pipes, tunnels and subways to determine indicators of their reliability and load-bearing capacity.

LO9-Classify the range of modern specialized construction machines and equipment to determine the optimal degree of mechanization and mechanical equipment of production processes.

LO10- Argument for methods of planning and organizing the construction of bridges, tunnels and subways using complex mechanization, automation and robotization of technological operations to improve the processes of construction of transport industry facilities.

LO11-Organize the use of rational methods of production processes for the effective performance of various types of work in the maintenance, repair and reconstruction of bridges, pipes, tunnels and subways.

LO12-Develop projects for the construction of bridges, pipes, tunnels and metro stations with rational parameters of load-bearing structures that ensure the necessary degree of stability, durability, reliability and efficiency.

Area of professional activity: Railway and road transport: design, construction, maintenance and repair of bridges, tunnels and subways.

Objects of professional activity:

- Local executive authorities in the field of railway and road transport and their regional structures;
- Organizations and enterprises of the transport industry in the field of design, construction, maintenance and repair of bridges and tunnels of the main network of railways, subways and access railways, and highways of industrial enterprises;
- Organizations and enterprises in the field of manufacturing building materials and structures for transport and communications complex facilities.

Types of professional activities:

-production and technological;
- organizational and managerial;
- service and operational;
- design.

Functions of professional activity:

1) Organization of production of building materials and structures for objects of the transport and communications complex; organization of design, construction, maintenance and repair of bridges, tunnels and subways; use of standard methods for calculating the reliability of bridges, tunnels and subways;

2) Management of production processes, analysis of the results of production activities; management of design and construction work, maintenance and repair of bridges, tunnels and subways; technical diagnostics of bridges, tunnels and subways, use of measuring instruments in bridge testing laboratories; analysis and assessment of production and non-production costs or resources for the quality design, construction, maintenance and repair of bridges, tunnels and subways;

3) Development of new technologies, development of design and technological documentation using computer technologies; calculation of strength and stability under various types of loading of bridges, tunnels and subways, development of projects for new and reconstruction (modernization) of existing railway and road bridges and tunnels; selection of building materials for the manufacture of structures of bridges, tunnels and subways, justification of technical solutions; development of technical specifications and technical conditions for projects of new and reconstruction (modernization) of existing railway and road bridges and tunnels, structures of bridges, tunnels and subways, technological processes for maintenance and repair of bridges, tunnels and subways, means of technical diagnostics of bridges, tunnels and subways with use of modern information technologies and computer programs; designing new

structures of bridges, tunnels and subways that meet the latest achievements of science and technology, safety requirements..

List of specialist positions: Head of the capital construction department, head of the production (technical, industrial-technical) department, head of the site (shop), head of the logistics department, head of the labor safety and health department, head of the labor standards and research laboratory, head of the instrumental department, head of the production laboratory (for production control), head of the quality control department, head of the bridge testing laboratory, pavement foreman, tunnel foreman, construction foreman, work foreman (foreman), industrial training foreman, foreman for routine maintenance and repair of artificial structures, lineman of artificial structures structures, project manager, project manager, leading engineer, design engineer, process engineer (technologist), repair engineer, inventory engineer of buildings and structures, metrology engineer, labor organization engineer, labor standards engineer, safety engineer and labor protection, environmental protection engineer (ecologist), laboratory engineer, engineer, chief specialist, leading specialist, specialist, design technician, site technician, process technician, building inventory technician, metrology technician, technician for labor, technician, laboratory technician, laboratory assistant.

Professional certificates received upon completion of training: Repairer of artificial structures, tiler.

Requirements for the previous level of education: general secondary, technical and vocational, post-secondary , higher education (bachelor's degree).

During the training process, students undergo various types of professional practice:

- educational;
- production;
- production (pre-graduation).

Educational practice (geodetic)

The organization of educational practice is aimed at ensuring that bachelors are familiar with the areas of professional activity and training profiles, with the ability to geodetic survey of terrain, forward and backward travel, leveling survey, reference to benchmarks, carrying out points and elevation marks from the map, solving typical engineering and geodetic problems, as well as visiting a branch of the department on the basis of Saulet SKB LLP. Form of control - report protection.

Industrial practice 1.

The main objectives of industrial practice are: consolidation of theoretical knowledge and practical skills in the chosen educational program in a production environment, gaining experience in organizational work, obtaining a working specialty, developing practical skills and competencies in the process of mastering the bachelor's program. Conducted in practice bases at enterprises in accordance with this educational program. Form of control - report protection.

Pre-graduation/industrial practice 2.

The purpose of internship for bachelors is to ensure the relationship between theoretical knowledge acquired through mastering the chosen educational program and practical activities. The objectives of this practice are to consolidate and deepen the theoretical knowledge acquired by students during the learning process, collect information for writing a final qualifying work, study best practices at the enterprise, as well as gain experience in independent research work, mastering a variety of methods of scientific work. Conducted in practice bases at enterprises in accordance with this educational program. Form of control - report protection.

Final examination

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.

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

No.	Name of the discipline	Number of credits	Matrix for correlating learning outcomes in the educational program with academic disciplines											
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	History of Kazakhstan	5	+											
2	Philosophy	5	+											
3	Foreign language	10				+								
4	Kazakh (Russian) language	10				+								
5	Information and communication technologies	5					+							
Socio-political knowledge module		8	+											
6	Sociology	2	+											
7	Cultural studies	2	+											
8	Political science	2	+											
9	Psychology	2	+											
10	Physical Culture	8	+											
11	Ecology and life safety	5				+								
12	Scientific Research Methods	5			+									
13	Fundamentals of law and anti-corruption culture	5	+			+								
14	Fundamentals of Economics and Entrepreneurship	5	+			+								
15	Engineering mathematics	9			+									
16	applied Physics	9			+									
17	Basics of computer modeling	6		+										
18	Construction Materials	6							+					
19	Geology, soil mechanics, bases and foundations	6					+							
20	Building construction	6							+					
21	Occupational Safety and Health	6				+								
22	Electrical engineering and electronics fundamentals	6		+										
23	Educational practice (godetic)													
24	Theoretical mechanics	6			+									
25	Engineering mechanics 1	6			+									
26	Strength of materials	6			+									
27	Engineering mechanics 2	6			+									
28	Structural mechanics	6			+									
29	Engineering mechanics 3	6			+									
30	The engineering geodesy	6					+							
31	Basics of geoinformatics	6					+							
32	Basics of designing transport structures	6							+					
33	Introduction to the design of transport infrastructure facilities	6							+					
34	Machinery and equipment in bridge and tunnel construction	6									+	+	+	
35	Mechanization of bridge-tunnel construction	6									+	+	+	
36	Bridges and pipes	9								+				

37	Transport Transport tunnels	9								+				
38	Subways	6								+				
39	Design of bridge crossings and tunnel crossings	9								+				
40	Maintenance and repair of bridges and pipes	9								+				
41	Maintenance and repair of tunnels and subways	9								+				
42	Industrial practice 1													
43	Industrial practice 2													
44	Technology of construction of bridges, tunnels and subways	6										+	+	
45	Bridge-tunnel construction technology	6										+	+	
46	Organization of construction of transport infrastructure facilities	6										+	+	
47	Organization and planning of construction of transport facilities	6										+	+	
48	Design of bridges and pipes, tunnels and metro stations	6		+										
49	Design of artificial structures in transport	6		+										
50	Managerial Economics (Minor)	3						+						
51	Transport Logistics (Minor)	3						+						
52	Resource saving in transport (Minor)	3						+						
53	Time Management (Minor)	3						+						
54	Digital diagnostics of construction sites (Minor)	3						+						
55	Business Analytics PowerBI (Minor)	3						+						
56	FINAL EXAMINATION													
57	Volunteering													
58	Financial literacy													

6. STRUCTURE OF THE BACHELOR'S EDUCATIONAL PROGRAM

No.	Name of discipline cycles	Total labor intensity	
		in academic hours	in academic credits

1	Cycle of general education disciplines (GED)	**1680**	**56**
1)	**Required component**	**1530**	**51**
	History of Kazakhstan	150	5
	Philosophy	150	5
	Foreign language	300	10
	Kazakh (Russian) language	300	10
	Information and communication technologies	150	5
	Module of socio-political knowledge (sociology, political science, cultural studies, psychology)	240	8
	Physical Culture	240	8
2)	**University component and (or) elective component**	**150**	**5**
2	Cycle of basic and major disciplines (DB, PD)	not less than 5280	no less than 176
1)	**University component and (or) elective component**		
2)	**Professional practice**		
3	Additional types of training (ADE)		
1)	**Component of choice**		
4	final examination	not less than 240	at least 8
	Total	**not less than 7200**	**not less than 240**

7.CURRICULUM FOR THE WHOLE TERM OF STUDY

АО "Академия логистики и транспорта"

УЧЕБНЫЙ ПЛАН

УТВЕРЖДЕН

Форма обучения: очная

Направление подготовки:
6В073 – *Архитектура и строительство*

Решением Ученого совета АЛТ
от «28» 06 2023 г. Протокол № 13

Группа образовательных программ:
В074 – Градостроительство, строительные работы и гражданское строительство

Председатель Ученого совета
С.Н. Амиргалиева

Срок обучения: 4 года

Наименование образовательной программы:
6В07321 – Строительство мостов, тоннелей и метрополитенов

Степень: *бакалавр техники и технологий*

Прием: 2023 год

№	Код дисциплины	Наименование циклов и дисциплин	Общая трудоемкость: в академических часах	в академических кредитах	Форма контроля, семестр: Экзамен	КП (КР)	Объем учебной нагрузки, контактные часы: Всего часов	Аудиторные: лекции	практические	лабораторные	СРО: СРОП	СРО	Распределение по семестрам: 1 курс 1 сем. 15 недель	1 курс 2 сем. 15 недель	2 курс 3 сем. 15 недель	2 курс 4 сем. 15 недель	3 курс 5 сем. 15 недель	3 курс 6 сем. 15 недель	4 курс 7 сем. 15 недель	4 курс 8 сем. 7 недель	4 курс 9 сем. 8 недель	Закрепление за кафедрой
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
		ЦИКЛ ОБЩЕОБРАЗОВАТЕЛЬНЫХ ДИСЦИПЛИН (ООД):																				
1.																						
1.1.	Обязательный компонент:		1530	51	13		1530	120	358	15	120	917	21	16	7	7	0	0	0	0	0	
1.1.1.	23-0-B-OK-K	История Казахстана	150	5	3		150	30	15		8	97			5							СГДиФВ
1.1.2.	23-0-B-OK-Fa	Философия	150	5	4		150	30	15		8	97				5						СГДиЭ
1.1.3.	23-0-B-OK-Ite	Иностранный язык	300	10	1,2		300		90		16	154	5	5								ЯП
1.1.4.	23-0-B-OK-KRYa	Казахский (Русский) язык	300	10	1,2		300		90		16	194	5	5								ЯП
1.1.5.	23-0-B-OK-ИКТ	Информационно-коммуникационные технологии	150	5	1		150	30		15	6	97	5									ИКТ
1.1.5.		Модуль социально-политических знаний:	240	8	1,2		240															
	23-0-B-OK-Soz	Социология						7	15		8	30		4								СГДиФВ
	23-0-B-OK-Kul	Культурология						8	15		8	29										СГДиЭВ
	23-0-B-OK-Pol	Политология						7	15		8	30	4									СГДиФВ
	23-0-B-OK-Psi	Психология						8	15		8	29										СГДиФВ
1.1.7.	23-0-B-OK-FK	Физическая культура	240	8	1,2 3,4		240		86		32	120	2	2	2	2						
1.2.	Компонент по выбору:		150	5	1	0	150	30	15	0	8	97	0	0	5	0	0	0	0	0	0	
		Модуль компонента по выбору ООД:																				АТСиБЖД
1.2.1.	23-0-B-KV-EBOD	Экология и безопасность жизнедеятельности	150	5	3		150	30	15		8	97			5							СГДиФВ
	23-0-B-KV-MNI	Методы научных исследований																				ЛМТ
	23-0-B-KV-OEP	Основы экономики и предпринимательства																				СГДиЭВ
	23-0-B-KV-OPAK	Основы прав и антикоррупционной культуры																				
	ВСЕГО по циклу ООД:		1680	56	14	0	1680	150	373	15	128	1014	21	16	12	7	0	0	0	0	0	
		ЦИКЛ БАЗОВЫХ ДИСЦИПЛИН (БД):																				
2			1680	56	9		1680	270	195	75	64	1016	9	15	6	2	6	12	6	0	0	СИ
2.1.	Вузовский компонент:		270	9	2		270	45	45		8	172		9								СИ
2.1.1.	23-0-B-VK-M	Инженерная математика	270	9	1		270	45	30	15	9	172	9									ИКТ
2.1.2.	23-0-B-VK-PF	Прикладная физика	180	6	2		180	30	30		8	112		6								СИ
2.1.3.	23-0-B-VK-OKM	Основы компьютерного моделирования	180	6	3		180	30	15	15	8	112			6							СИ
2.1.4.	23-0-B-VK-SMSM	Строительные материалы	180	6	5		180	30	15	15	8	112					6					СИ
2.1.5.	23-0-B-VK-GMGOF	Геология, механика грунтов, основания и фундаменты	180	6	6		180	30	30		8	112						6				СИ
2.1.6.	23-0-B-VK-SK	Строительные конструкции	180	6	6		180	30	15	15	8	112						6				Э
2.1.7.	23-0-B-VK-EOE	Электротехника и основы электроники	180	6	7		180	30	15	15	8	112							6			АТСиБЖД
2.1.8.	23-0-B-VK-OT	Охрана труда	180	6	4		180	30	15	15	8	112				2						СИ
2.1.9.	23-0-VK-UPrG	Учебная практика (геодезическая)	60	2	6		60															
2.2.	Компонент по выбору:		1080	36			1080	150	150	60	48	572	0	0	12	12	12	0	6	0	0	
2.2.1.	23-0-B-VVKV-TMeh	Теоретическая механика	180	6	3		180	30	30		8	112			6							СИ
	23-0-B-KV-INeh1	Инженерная механика 1														6						
2.2.2.	23-0-B-KV-SMat	Сопротивление материалов	180	6	4		180	15	30	15	8	112										СИ
	23-0-B-KV-INeh2	Инженерная механика 2																				

2.2.3.	23-0-B-KV-SMeh	Строительная механика	180	6	5		180	30	30		8	112					6					СИ
	23-0-B-KV-IMeh3	Инженерная механика 3																							
2.2.4.	23-0-B-KV-IGeod	Инженерная геодезия	180	6	3		180	30	15	15	8	112			6							СИ
	23-0-B-KV-OGi	Основы геоинформатики																							
2.2.5.	23-0-B-KV-OPTS	Основы проектирования транспортных сооружений	180	6	4		180	15	15	30	8	112				6						СИ
	23-0-B-KV-VPOTIs	Введение в проектирование объектов транспортной инфраструктуры																							
2.2.6.	23-21/29-B-KV-MOMTS	Машины и оборудования в мосто- и тоннелестроении	180	6	5		180	30	30		8	112					6					АТОиБЖД
	23-21/29-B-KV-MMtS	Механизация мостотоннельного строительства																							
	ВСЕГО по циклу БД:		2760	92	15	0	2760	420	345	135	112	1688	9	15	18	14	18	12	5	0	0				
3.	ЦИКЛ ПРОФИЛИРУЮЩИХ ДИСЦИПЛИН (ПД):																								
3.1.	Вузовский компонент:		1740	58	8		1740	255	255	0	48	972	0	0	0	9	9	9	18	9	4				
3.1.1.	23-21-B-VK-MT	Мосты и трубы	270	9	4		270	45	45		8	172				9						СИ			
3.1.2.	23-21-B-VK-TT	Транспортные тоннели	270	9	5		270	45	45		8	172					9					СИ			
3.1.3.	23-21/29-B-VK-Mp	Метрополитены	180	6	6		180	30	30		8	112						6				СИ			
3.1.4.	23-21/29-B-VK-PMPTP	Проектирование мостовых переходов и тоннельных пересечений	270	9	7		270	45	45		8	172							9			СИ			
3.1.5.	23-21-B-VK-TORMT	Техническое обслуживание и ремонт мостов и труб	270	9	7		270	45	45		8	172							9			СИ			
3.1.6.	23-21-B-VK-TORTMp	Техническое обслуживание и ремонт тоннелей и метрополитенов	270	9	8		270	45	45		8	172								9		СИ			
3.1.7.	23-0-B-VK-PPr1	Производственная практика 1	90	3	6		90											3				СИ			
3.1.8.	23-0-B-VK-PPr2	Производственная практика 2	120	4	9		120														4	СИ			
3.2.	Компонент по выбору:		810	27	6	0	810	135	135	0	48	492	0	0	0	0	3	9	9	6	0				
3.2.1.	23-21/29-B-KV-TSMTMp	Технология строительства мостов, тоннелей и метрополитенов	180	6	6		180	30	30		8	112						6				СИ			
	23-21/29-B-KV-TMTS	Технология мостотоннельного строительства																							
3.2.2.	23-0-B-KV-OSOTIs	Организация строительства объектов транспортной инфраструктуры	180	6	7		180	30	30		8	112							6			СИ			
	23-0-B-KV-OPSTS	Организация и планирование строительства транспортных сооружений																							
3.2.3.	23-21/29-B-KV-PMTTSMp	Проектирование мостов и труб, тоннелей и станций метрополитена	180	6	8		180	30	30		8	112								6		СИ			
	23-21/29-B-KV-PIST	Проектирование искусственных сооружений на транспорте																							
	Минорная программа 1 "Управление ресурсами"																								
3.2.4.	23-0-B-UE	Управленческая экономика	90	3	5		90	15	15		8	52					3					ЛМТ			
3.2.5.	23-0-B-TL	Транспортная логистика	90	3	6		90	15	15		8	52						3				ЛМТ			
3.2.6.	23-0-B-RT	Ресурсосбережение на транспорте	90	3	7		90	15	15		8	52							3			ПС			
	Минорная программа 2 "Цифровые компетенции"																								
3.2.4.	23-0-B-TM	Тайм-менеджмент	90	3	5		90	15	15		8	52					3					ЛМТ			
3.2.5.	23-0-B-TsDOS	Цифровая диагностика объектов строительства	90	3	6		90	15	15		8	52						3				СИ			
3.2.6.	23-0-B-BAPBI	Бизнес аналитика Power BI	90	3	7		90	15	15		8	52							3			ИКТ			
	ВСЕГО по циклу ПД:		2550	85	14	0	2550	390	390	0	96	1464	0	0	0	9	12	18	27	15	4				
	ИТОГО ПО ТЕОРЕТИЧЕСКОМУ КУРСУ ОБУЧЕНИЯ (ТКО):		6990	233	43	0	6990	960	1108	150	336	4166	30	31	30	30	30	30	33	15	8	СИ			
4.	23-0-B-VK-IA	ИТОГОВАЯ АТТЕСТАЦИЯ	240	8																	12				
	ИТОГО ЗА ВЕСЬ ПЕРИОД ОБУЧЕНИЯ:		7230	241									30	31	30	30	30	30	33	15					
5.	ДОПОЛНИТЕЛЬНЫЕ ВИДЫ ОБУЧЕНИЯ (ДВО):																					СИ			
5.1.	23-0-B-DVO-V	Волонтёрство	30	1	1		30		10		8	12	1									ЛМТ			
5.2.	23-0-B-DVO-FG	Финансовая грамотность	90	3	3		90	15	15		8	52			3										

СОГЛАСОВАНО:

Проректор по АД _____ Жармагамбетова М.С.

Директор ДАПК _____ Липская М.А.

РАЗРАБОТАНО:

Директор института "ТИ" _____ Чигамбаев Т.О.

Заведующая кафедрой "СИ" _____ Исмагулова С.О.

8. CATALOG OF DISCIPLINES OF THE UNIVERSITY COMPONENT

EDUCATIONAL PROGRAM **6B07321 – Construction of bridges, tunnels and subways**

Level of education: bachelor's **degree Duration of study: 4 years** **Year of admission: 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	VK	Engineering mathematics	270	9	2	LO3	Mastering the mathematical apparatus for solving theoretical and applied problems of a specific profile, gaining an understanding of mathematical modeling and interpretation of the solutions obtained. Issues of linear algebra, analytical geometry, mathematical analysis, differential equations, and series theory are considered.	Engineering mathematics applied Physics Basics of computer modeling	Geology, soil mechanics, bases and foundations Building construction Theoretical mechanics Engineering mechanics 1 Strength of materials Engineering mechanics 2
DB	VK	applied Physics	270	9	1	LO3	Formation in students of skills in the use of fundamental laws, theories of classical and modern physics, as well as methods of physical research, thinking, scientific worldview, with independent cognitive activity, to be able to simulate physical situations using computer technology and ideas about the modern natural science picture of the world.	Engineering mathematics applied Physics Basics of computer modeling	Geology, soil mechanics, bases and foundations Building construction Electrical engineering and electronics fundamentals Design of bridges and pipes, tunnels and metro stations Strength of materials Engineering mechanics 2
DB	VK	Basics of computer modeling	180	6	2	LO2	Forms theoretical and practical knowledge, skills and abilities in the field of computer modeling of various types of processes (physical, technological, economic, etc.), the ability to use tools (application software	Engineering mathematics applied Physics Basics of computer modeling	Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations Strength of materials

							packages) using three-dimensional visualization tools and methods to solve applied engineering and technical problems. technical and economic problems, planning and carrying out work on bridge, tunnel and subway projects.		Engineering mechanics 2 Transport tunnels Subways
DB	VK	Construction Materials	180	6	3	LO7	Use modern building materials, demonstrate basic quality indicators, modern methods of production of building materials for the transport industry, basic patterns and dependencies on physical and mechanical properties, production technology and formation conditions, finishing methods, mastering technological processes of construction production, production of building materials, products and structures on erected artificial structures.	Engineering mathematics applied Physics Basics of computer modeling	Bridges and pipes Transport tunnels Subways Maintenance and repair of bridges and pipes Maintenance and repair of tunnels and subways Geology, soil mechanics, bases and foundations Building construction
DB	VK	Geology, soil mechanics, bases and foundations	270	9	5	LO5	Forms theoretical and practical knowledge, skills and abilities that allow one to master the general laws and principles of engineering geology and soil mechanics, engineering geological processes and phenomena in soil massifs, basic calculations, physical and mechanical properties of soils at the base of foundations and their joint work with superstructures in order to ensure the reliability and durability of transport structures.	Engineering mathematics applied Physics Basics of computer modeling Construction Materials The engineering geodesy Introduction to the design of transport infrastructure facilities	Technology of construction of bridges, tunnels and subways Organization of construction of transport infrastructure facilities Organization and planning of construction of transport facilities Design of artificial structures in transport
DB	VK	Building construction	180	6	6	LO7	Forms basic knowledge of shaping, calculation and design of load-bearing structures, the ability to correctly select materials, section shapes, design design diagrams of structures, based on the purpose and purposes of operation, develop design solutions for newly constructed or strengthened transport structures, master the skills of calculating structural elements based on limit states, ensuring compliance with the required indicators of reliability, efficiency, and	Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Introduction to the design of transport infrastructure	Bridges and pipes Transport tunnels Subways Design of bridge crossings and tunnel crossings Occupational Safety and Health Design of artificial structures in transport Design of bridges and pipes, tunnels and metro

							effectiveness.	facilities	stations
DB	VK	Electrical engineering and electronics fundamentals	180	6	6	LO2	The study of electrical circuits of direct, alternating and three-phase current, the principle of operation, purpose and operating rules of transformers and electrical machines, methods for measuring electrical quantities, general rules for the operation of semiconductor devices during the operation of power supply and lighting circuits at transport construction sites .	Engineering mathematics applied Physics Basics of computer modeling Strength of materials Engineering mechanics 2 Introduction to the design of transport infrastructure facilities	Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations Machinery and equipment in bridge and tunnel construction Mechanization of bridge-tunnel construction
DB	VK	Occupational Safety and Health	180	6	7	LO4	Training of specialists on the theoretical and practical foundations of safety, harmlessness and facilitation of working conditions with maximum productivity, on the legislative and regulatory framework in the field of labor protection.	Construction Materials Theoretical mechanics The engineering geodesy Construction Materials The engineering geodesy Introduction to the design of transport infrastructure facilities	Bridge-tunnel construction technology Technology of construction of bridges, tunnels and subways Organization of construction of transport infrastructure facilities Organization and planning of construction of transport facilities
DB	VK	Educational practice *(geodetic)*	60	2	4	LO3,5, 7	Educational practice (geodetic) The organization of educational practice is aimed at ensuring that bachelors are familiar with the areas of professional activity and training profiles, with the ability to geodetic survey of terrain, forward and backward movement, leveling survey, reference to benchmarks, carrying out points and elevation marks from the map, solving standard engineering - geodetic tasks.	Engineering mathematics applied Physics Basics of computer modeling	Building construction Bridge-tunnel construction technology Technology of construction of bridges, tunnels and subways Transport tunnels Subways Design of bridge crossings and tunnel crossings
PD	VK	Bridges and pipes	270	9	4	PO8	Forms practical knowledge on the use of methods for calculating load-bearing structures when designing bridges and pipes, methods for determining the most rationally justified functional	Engineering mathematics applied Physics Basics of computer modeling	Transport tunnels Subways Design of bridge crossings and tunnel crossings

							requirements for bridges and pipes, standardized parameters for calculating their load-bearing capacity and reliability, basic physical and mechanical properties and characteristics, features of the work of the materials used in various engineering-geological, hydrological and climatic conditions of their operation.	Construction Materials Theoretical mechanics The engineering geodesy	Maintenance and repair of bridges and pipes Design of bridges and pipes, tunnels and metro stations
PD	VK	Transport Transport tunnels	270	9	5	LO8	Forms theoretical and practical knowledge and skills of the basics of classification of transport tunnels, rational methods and methods for their design and construction, selection of dimensions, technological and design solutions for the construction of transport tunnels, arrangement of internal equipment of railway and road tunnels, technology for constructing tunnels in the most effective and economically feasible ways, methods of calculation and design of transport tunnels.	Engineering mathematics Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy Strength of materials	Maintenance and repair of tunnels and subways Bridge-tunnel construction technology Organization of construction of transport infrastructure facilities Design of bridges and pipes, tunnels and metro stations
PD	VK	Subways	180	6	6	LO8	Gives an idea of the loads acting on the load-bearing structures of transition and station tunnels of the metro, about the features of geodetic work for the construction of subways, the physical and mechanical essence of the internal processes occurring in the soil mass when opening a working, about ventilation and lighting, power supply, alarm system, water supply, sewerage and heating of subways to perform calculations of their strength and load-bearing capacity.	Engineering mathematics Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Introduction to the design of transport infrastructure facilities	Maintenance and repair of tunnels and subways Bridge-tunnel construction technology Organization of construction of transport infrastructure facilities Design of artificial structures in transport
PD	VK	Design of bridge crossings and tunnel crossings	270	9	7	LO8	Forms theoretical and practical knowledge on the use of methods and techniques for selecting a bridge crossing location to create the most rational plan and longitudinal profile of the railway and highway when crossing river boundaries with a bridge crossing, taking into account the climatic, topographical, geotechnical, hydrological and	Engineering mathematics Basics of computer modeling Construction Materials Theoretical mechanics The engineering	Maintenance and repair of bridges and pipes Industrial practice 2 Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations

							environmental conditions of the area where the transport highway is being constructed with minimal expenditure of material and technical resources.	geodesy Strength of materials Introduction to the design of transport infrastructure facilities	
PD	VK	Maintenance and repair of bridges and pipes	270	9	7	LO8	Forms the skills of routine maintenance, major repairs, strengthening and reconstruction of bridges and pipes, the use of the most rational methods and methods of maintenance of bridge spans and pipes, identification of defects and damage to bridge structures, assessment of load capacity and classification of bridges, effective use of machines and mechanisms when performing various types of repairs, development of work projects.	Engineering mathematics Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy	Technology of construction of bridges, tunnels and subways Industrial practice 2 Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations
PD	VK	Maintenance and repair of tunnels and subways	270	9	8	LO8	Teaches the skills of maintenance and repair of tunnels and subways using rational and effective methods of major repairs, strengthening and reconstruction of exploited tunnels and subways, selection of modern types of mechanisms and equipment used in current and major repairs and reconstruction of underground structures, knowledge of methods for restoring tunnels and subways and organization of normal operation.	Engineering mathematics Basics of computer modeling Construction Materials The engineering geodesy Strength of materials Introduction to the design of transport infrastructure facilities	Industrial practice 2
PD	VK	Industrial practice 1	90	3	6	LO3,5, 7,8	The main objectives of industrial practice are: consolidation of theoretical knowledge and practical skills in the chosen educational program in a production environment, gaining experience in organizational work, obtaining a working specialty, developing practical skills and competencies in the process of mastering the bachelor's program. Conducted in practice bases at enterprises in accordance with this educational program.	Engineering mathematics Basics of computer modeling Construction Materials The engineering geodesy Strength of materials	Design of bridge crossings and tunnel crossings Maintenance and repair of bridges and pipes Industrial practice 2 Organization of construction of transport infrastructure facilities

							discipline includes guest lectures by leading specialists from transport and logistics companies.		
DVO	IN	Resource saving in transport	150	5	7	LO6	Study of the main types and characteristics of energy resources, regulatory support for energy saving, increasing the energy efficiency of the transportation process; energy-saving technologies in repair production and in the operation of transport infrastructure facilities; organization and methods of energy saving management. Problem solving, thematic colloquiums and debates are used. Guest lectures are being held by leading specialists in the transport and communications industry.	Applied physics, Engineering mathematics, Ecology and life safety	final examination
Minor program 2 "Digital Competencies"									
DVO	IN	Time management	150	5	5	LO6	Formation among students of general ideas about the essence and types of time management, principles and methods of managing time resources for more successful professional activities.	Engineering Mathematics,	final examination
DVO	IN	Digital diagnostics of transport facilities	150	5	6	LO6	Study of digital information processing systems, main functional units, principles of information division and multiplexing, analysis of the characteristics of digital communication channels when diagnosing transport construction projects.	Basics of computer modeling Basics of designing transport structures Introduction to the design of transport infrastructure facilities	final examination
DVO	IN	Business analytics Power BI	150	5	7	LO6	Teaches the skills of creating interactive visualizations of data obtained from various sources and sharing them with employees of the organization, obtaining valuable information when making strategic decisions, analyzing historical and current data, presenting results in intuitive visual formats, providing shared access to business-critical analytical information with using Power BI.	Engineering Mathematics,	final examination

PD	VK	Industrial practice 2	120	4	9	LO3,5, 7,8	The purpose of internship for bachelors is to ensure the relationship between theoretical knowledge acquired through mastering the chosen educational program and practical activities. The objectives of this practice are to consolidate and deepen the theoretical knowledge acquired by students during the learning process, collect information for writing a final qualifying work, study best practices at the enterprise, as well as gain experience in independent research work, mastering a variety of methods of scientific work. Conducted in practice bases at enterprises in accordance with this educational program.	Engineering mathematics Basics of computer modeling Construction Materials The engineering geodesy Strength of materials Introduction to the design of transport infrastructure facilities	FINAL EXAMINATION
Minor program 1 "Resource Management"									
DVO	IN	Managerial Economics	150	5	5	LO6	Formation of a conceptual apparatus and development of economic analysis skills using modern models and patterns of economic science, consideration of economic problems and tasks facing the head of the company. Studying this discipline will allow students to gain and develop knowledge in the field of analytical research into the economic, technological and technical parameters of an enterprise, and will also allow them to master the skills of using special methods for economic justification of management decisions and assessing their consequences.	Engineering Mathematics, Fundamentals of Economics and Entrepreneurship	final examination
DVO	IN	Transport logistics	150	5	6	LO6	Study of the basic provisions of transport support for logistics systems, activities in the field of transportation, covering the entire range of operations and services for the delivery of goods from the manufacturer to the consumer, principles of design and construction of logistics systems. Mastering the skills of optimizing and organizing rational cargo flows, their processing in specialized logistics centers, ensuring an increase in their efficiency, reducing unproductive costs and expenses. Teaching methods are: problem solving, thematic colloquiums, brainstorming seminars. The	Engineering mathematics	final examination

9. CATALOG OF CHOICE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM **6B07321 – Construction of bridges, tunnels and subways**

Level of education: bachelor's **degree Duration of study: 4 years** **Year of admission: 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
OOD	KV	Ecology and life safety	150	5	3	LO4	Study of basic environmental concepts, environmental problems and approaches to their solution, sources and types of environmental pollution by enterprises, principles of standardization of air and water quality, basic provisions of legislation in various fields, natural and man-made emergencies, their causes, methods of prevention and protection . Teaching methods - analysis of specific situations (case-study).	Engineering mathematics applied Physics Basics of computer modeling	Introduction to the design of transport infrastructure facilities Bridges and pipes Strength of materials Engineering mechanics 2
		Scientific Research Methods				LO3	Students obtain theoretical and applied knowledge on methods of scientific research of problems in the field of study, train specialists with skills of cognitive activity in the field of science, formulate deep ideas about the content of scientific activity, its methods and forms of knowledge.	Engineering mathematics applied Physics Basics of computer modeling	Introduction to the design of transport infrastructure facilities Structural mechanics Machinery and equipment in bridge and tunnel construction Mechanization of bridge-tunnel construction
		Fundamentals of Economics and Entrepreneurship				LO1	Formation of analytical thinking skills on economic issues, the ability to independently draw conclusions based on the material being studied, navigate in any economic situations, apply theoretical economic knowledge in practical activities, realize one's abilities, both personally and professionally.	Engineering mathematics applied Physics Basics of computer modeling	Introduction to the design of transport infrastructure facilities Bridges and pipes Organization of construction of

									transport infrastructure facilities Organization and planning of construction of transport facilities
		Fundamentals of law and anti-corruption culture				LO1	Increasing public and individual legal awareness and legal culture of students, as well as the formation of a system of knowledge and civic position to combat corruption as an antisocial phenomenon. As a result of studying the course, students must master the fundamental concepts of law, the constitutional structure of state power of the Republic of Kazakhstan, the rights and freedoms of citizens enshrined in the Constitution, the mechanism and protection of legitimate human interests in the event of their violation.	Engineering mathematics applied Physics Basics of computer modeling	Organization of construction of transport infrastructure facilities Organization and planning of construction of transport facilities Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations
DB	KV	Theoretical mechanics	180	6	3	LO3	Formation of scientific engineering thinking, familiarization with the basic concepts, laws and theorems that allow one to draw up equations that describe the behavior of mechanical systems, the ability to write down a specific phenomenon in mathematical form, the application of basic methods of mechanics in the study of the motion and equilibrium of mechanical systems in the study of disciplines of the professional cycle.	Engineering mathematics applied Physics Basics of computer modeling	Strength of materials Engineering mechanics 2 Structural mechanics Engineering mechanics 3 Transport tunnels Subways
		Engineering mechanics 1				LO3	Formation of logical thinking and the scientific foundation of engineering education, study of the laws of motion and equilibrium of material bodies, construction of mathematical models of the behavior of mechanical systems using theorems of mechanics, use of methods for studying the equilibrium and motion of mechanical systems to solve technical problems.	Engineering mathematics applied Physics Basics of computer modeling	Structural mechanics Engineering mechanics 3 Machinery and equipment in bridge and tunnel construction Mechanization of bridge-tunnel construction
DB	KV	Strength of materials	180	6	4	LO3	Formation of fundamental knowledge in the field of calculations of structural elements for strength, rigidity and stability, development of computational and experimental fundamentals	Engineering mathematics applied Physics Basics of	Transport tunnels Subways Design of bridge crossings and tunnel

							and practical methods for calculating structures subject to reliability, durability, efficiency, taking into account the mechanical properties of structural materials and the ability to design according to strength criteria, correctly assessing the limit state, to carry out verification and design calculations using modern educational and information technologies.	computer modeling Construction Materials Theoretical mechanics The engineering geodesy	crossings Maintenance and repair of bridges and pipes Maintenance and repair of tunnels and subways
		Engineering mechanics 2				LO3	To familiarize with the basic techniques for determining internal forces and stresses for each type of deformation, methods for calculating structures and their elements for strength, rigidity and stability, skills for studying loads, displacements and stress-strain states in structural elements, constructing design diagrams of machine parts and calculating products for meeting the requirements of reliability and efficiency under the influence of static and dynamic loads.	Engineering mathematics applied Physics Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy	Structural mechanics Engineering mechanics 3 Transport tunnels Subways Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations Industrial practice 1
DB	KV	Structural mechanics	180	6	5	LO3	Studies the basic methods of calculating structural elements and structures for strength, rigidity and stability, to carry out calculations of load-bearing elements of transport structures and structures for strength, rigidity, stability and durability, taking into account the time-varying mechanical properties of the materials used, to correctly select structural forms and materials that provide the required indicators of reliability, safety and efficiency of both operated and created structures and structures.	Engineering mathematics Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Introduction to the design of transport infrastructure facilities	Machinery and equipment in bridge and tunnel construction Mechanization of bridge-tunnel construction Subways Maintenance and repair of bridges and pipes Maintenance and repair of tunnels and subways
		Engineering mechanics 3				LO3	Studies the theoretical foundations and methods of carrying out calculations for strength, rigidity and stability of structural elements of transport structures, the main types of mechanisms, parts and components of machines, general principles of design and construction, construction of models and algorithms for calculating products according	Engineering mathematics Basics of computer modeling Construction Materials Theoretical	Subways Design of bridge crossings and tunnel crossings Maintenance and repair of bridges and pipes Maintenance and

							to the main performance criteria when assessing the reliability of existing equipment in conditions operation.	mechanics Strength of materials Engineering mechanics 2	repair of tunnels and subways Industrial practice 2
DB	KV	The engineering geodesy	180	6	3	LO5	Forms professional competencies that determine the bachelor's readiness and ability to use basic knowledge in the field of geodesy, allows for geodetic measurements related to solving typical construction problems, detailed breakdown of structures, control of the geometric shapes of the structure being built, and perform as-built surveys of the results of individual stages of construction and installation work , provides skills in using basic geodetic instruments for specific production conditions.	Engineering mathematics applied Physics Basics of computer modeling	Transport tunnels Subways Design of bridge crossings and tunnel crossings Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations
		Basics of geoinformatics				LO5	Studies the history of the development of geographic information systems (GIS), basic concepts and terms, general issues of geoinformatics, application technologies in subject areas of professional activity, the current state of technical, software and information support of GIS, forms an understanding of the features of creating a GIS, hardware and software, and applied GIS for use in business, management, science and technology.	Engineering mathematics applied Physics Basics of computer modeling	Transport tunnels Subways Design of bridge crossings and tunnel crossings Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations
DB	KV	Basics of designing transport structures	180	6	4	LO7	Forms knowledge and skills in using automated design tools for artificial structures using the AutoCAD software package, designing communication routes, basic elements of highways, basic elements of airfields and airports, bridges and traffic interchanges, teaches how to work in text editors and spreadsheet editors in order to implement rational principles of design of transport structures.	Engineering mathematics applied Physics Basics of computer modeling	Structural mechanics Engineering mechanics 3 Machinery and equipment in bridge and tunnel construction Mechanization of bridge-tunnel construction
		Introduction to the design of transport infrastructure facilities				LO7	Forms professional competencies in the field of state regulation of the organization and management of transport complexes, optimization of technological processes and design of transport infrastructure facilities, deepening knowledge about the road transport and railway complex as a set of industries not	Engineering mathematics applied Physics Basics of computer modeling Construction	Transport tunnels Subways Design of bridge crossings and tunnel crossings Maintenance and repair of bridges and

							only directly performing transportation, but also assessing elements of transport infrastructure from the standpoint of safety and efficiency, make a reasonable choice of roads according to classification when developing the network to organize efficient and safe transportation.	Materials Theoretical mechanics The engineering geodesy	pipes Maintenance and repair of tunnels and subways
		Machinery and equipment in bridge and tunnel construction	180	6	5	LO9,10,11	It studies the scope of application, control systems, design features and technical characteristics of a wide range of modern specialized construction machines and equipment, examines the technologies of general construction processes carried out during the construction of bridges and tunnels using specialized construction machines and small-scale mechanization equipment in order to train specialists for construction and design organizations transport construction industry.	applied Physics Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Engineering mechanics 2 Introduction to the design of transport infrastructure facilities	Subways Design of bridge crossings and tunnel crossings Maintenance and repair of bridges and pipes Maintenance and repair of tunnels and subways Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations Industrial practice 2
		Mechanization of bridge-tunnel construction				LO9,10,11	It studies the purpose, design, area of rational use of construction machines in the construction of bridges and tunnels, modern methods of designing complex mechanization of road construction works, allows one to master the skills of organizing technological processes of production and operation of ground transport-technological machines and complexes for the purpose of determining the optimal degree of mechanization and mechanical equipment production processes in the construction complex.	Engineering mathematics applied Physics Basics of computer modeling Strength of materials Engineering mechanics 2 Introduction to the design of transport infrastructure facilities	Design of bridge crossings and tunnel crossings Maintenance and repair of tunnels and subways Industrial practice 2 Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations
PD	KV	Technology of construction of bridges,	180	6	6	LO10,11	Describes methods for installing reinforced concrete and metal bridges, methods for constructing supports and foundations of	Basics of computer modeling	Organization of construction of transport

		tunnels and subways					overpasses, technologies for manufacturing elements of prefabricated reinforced concrete bridge structures and steel bridge superstructures, methods for constructing transport tunnels, stage and station tunnels and metro stations using complex mechanization and robotization of mining operations to improve technologies for the construction of transport structures.	Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Introduction to the design of transport infrastructure facilities	infrastructure facilities Organization and planning of construction of transport facilities Design of bridges and pipes, tunnels and metro stations
		Bridge-tunnel construction technology				LO10, 11	Forms theoretical and practical knowledge on the installation of bridge superstructures using longitudinal sliding, mounted and semi-mounted assembly methods, the production of earthworks using scrapers, bulldozers, graders, single-bucket and multi-bucket excavators, the construction of tunnels using mining and panel methods, drilling and blasting operations, technologies for the production of earthen, concrete, reinforced concrete and installation works for the purpose of improving bridge-tunnel construction technologies.	Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Engineering mechanics 2 Introduction to the design of transport infrastructure facilities	Design of bridge crossings and tunnel crossings Maintenance and repair of bridges and pipes Organization of construction of transport infrastructure facilities Organization and planning of construction of transport facilities
PD	KV	Organization of construction of transport infrastructure facilities	180	6	7	LO10, 11	Describes, models and plans the organization of construction of transport infrastructure facilities, technological processes of work, management of material and technical support of enterprises and organizations, uses methods and methods for forming sets of machines for the construction of transport facilities, organizes activities for the design of product manufacturing processes, the use of automation tools and systems for the purpose of managing the construction cycle of a transport infrastructure facility.	Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Engineering mechanics 2 Introduction to the design of transport infrastructure	Maintenance and repair of tunnels and subways Industrial practice 2 Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations

								facilities	
		Organization and planning of construction of transport facilities				LO10, 11	Formulates and classifies the principles of organizing and planning the construction of transport facilities, content, structure, types and varieties of technological processes, organizational and technical preparation of the construction site, organization of factory production of reinforced concrete, steel and composite structures, methods and means of integrated mechanization of production, models of calendar plans and network schedules for selecting options for organizational and technological solutions for the construction of transport structures.	Basics of computer modeling Construction Materials Theoretical mechanics The engineering geodesy Strength of materials Engineering mechanics 2 Introduction to the design of transport infrastructure facilities	Maintenance and repair of tunnels and subways Industrial practice 2 Design of artificial structures in transport Design of bridges and pipes, tunnels and metro stations
PD	KV	Design of bridges and pipes, tunnels and metro stations	180	6	8	LO2	Teaches the skills of designing and calculating road and railway bridges and pipes, haul tunnels and metro stations, taking into account complex engineering-geological and hydrological conditions, seismic and man-made impacts, designing diagrams of bridge crossings, tunnel and station complexes in order to implement the most effective design solutions for bridges, pipes, internal arrangements of tunnel and station complexes.	Engineering mathematics Basics of computer modeling Construction Materials The engineering geodesy Strength of materials Introduction to the design of transport infrastructure facilities	Industrial practice 2 FINAL EXAMINATION
		Design of artificial structures in transport				LO2	Forms practical skills in the use of modern methods and methods of design and the fundamentals of mathematical modeling of artificial structures in transport, taking into account static and dynamic loads, natural and man-made influences, complex engineering-geological and hydrological conditions, allowing to identify the most rational parameters of elements of load-bearing	Basics of computer modeling Construction Materials The engineering geodesy Strength of materials	Industrial practice 2 FINAL EXAMINATION

								structures to ensure the required degree of stability , durability, reliability and cost-effectiveness of the structure.	Introduction to the design of transport infrastructure facilities	

Рецензия

на образовательную программу

«6В07331 – Кадастр и градостроительство» по направлению подготовки **«6В073 – Архитектура и строительство»**

Образовательная программа (бакалавриат – 4 года) **«6В07331 – Кадастр и градостроительство»** содержит следующую информацию: квалификация выпускника, форма и срок обучения, направление и характеристика деятельности выпускников, приведен полный перечень компетенций, которыми должен обладать выпускник в результате освоения данной образовательной программы.

Дисциплины учебного плана по рецензируемой образовательной программе формируют весь необходимый перечень общекультурных и профессиональных компетенций, предусмотренных ГОСО по соответствующим видам деятельности.

В учебном плане образовательной программы определен перечень всех учебных дисциплин обязательного компонента и компонента по выбору, трудоемкость каждой учебной дисциплины в кредитах, последовательность их изучения, виды учебных занятий и формы контроля. Каталог элективных дисциплин. Каталог внутривузовского компонента полностью отражают преемственность дисциплин («Виртуальное компьютерное моделирование в архитектуре и градостроительстве», «Инженерное благоустройство территории и транспорта», «Территориальное планирование и прогнозирование»).

Соблюдена последовательность изучения дисциплин, включены дисциплины необходимые для производства и технологического процесса.

Содержание рабочих программ учебных дисциплин и практик позволяет сделать вывод, что оно соответствует компетентностной модели выпускника.

Образовательная программа предусматривает профессионально-практическую подготовку бакалавров в виде практики. Содержание программ практик свидетельствует об их способности сформировать практические навыки обучающихся.

Для разработки образовательной программы были привлечены опытный профессорско-преподавательский состав, ведущие представители работодателя, обучающиеся, учтены их требования при формировании дисциплин профессионального цикла.

Заключение:

В целом, рецензируемая образовательная программа отвечает основным требованиям ГОСО, национальной рамке квалификаций, отраслевой рамке квалификаций, профессиональных стандартов. Атласу новых профессий и способствует формированию общекультурных и профессиональных компетенций по направлению подготовки «6В073 – Архитектура и строительство».

Рецензент

«Казахского национального исследовательского технического университета имени К.И. Сатпаева»
Профессор кафедры «ГиСМ»
доктор технических наук _____ **Шанхметов С.Б.**

13. Protocols of review and approval

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 the production: V.S.N., 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 Konysbai A.D.

AGENDA :

5. Consideration of the graduate competency model
6. 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: V.S.N., Doctor of Technical Sciences, Professor of «KazdorNII» JSC - Shalkarov A.A., who proposed, due to the specifics of their organization, to reflect the followingin the objects of professional activity: Modern innovative technologies in the transport and communications sector.

SPEAKED:
Member of the department Khasenov S.S., who proposed to approve.
After reviewing the graduate competency model, it was proposed to approve this Model for 3 levels of education.

DECIDED:
- 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 design and construction of bridges, tunnels and subways.

We make proposals to include the following popular disciplines in the RUP:Bridges, tunnels and subways, building materials, Building structures, Fundamentals of design of transport structures, Technology of construction of bridges, tunnels and subways.

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

We consider it necessary to include the following disciplines in the RUP:Design of bridge crossings and tunnel intersections, Maintenance and repair of bridges and pipes, Maintenance and repair of tunnels and subways.

DECIDED:

5. Please take note of the information;
6. Take into account suggestions and recommendations of employers and students;

Consider including the following disciplines in the RUP: Design of bridge crossings and tunnel intersections, Maintenance and repair of bridges and pipes, Maintenance and repair of tunnels and subways,Bridges, tunnels and subways, building materials, Building structures, Fundamentals of design of transport structures, Technology of construction of bridges, tunnels and subways.

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 «15» 03 2023

Chairman: Chigambaev T.O.
Secretary: Utepova A.

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

Representatives from the production: V.S.N., 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 Konysbai 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 of 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 6B07321 - Construction of bridges, tunnels and subways.

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:

7. Please take note of the information;
8. Take into account all suggestions and recommendations of employers and representatives of student activists;
9. 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 COC UMB: **Chigambaev T.O.**

Secretary: **Utepova A.**

14. APPROVAL SHEET

№п/п	Ф.И.О.	Место работы и должность	Подпись	Дата
1	Жамагулова С.О.	зав. каф. „СИ"		30.03.23г
2	Сомалиева Ф.А.	зав.кафедрой БТ		30.03.23г.
3	Арипбаев ТК	зав.каф ПС		30.03.23г
4	Жапишбетова А.Т	зав каф ОО		30.03.23г
5	Шингисов Б.Т.	зав. каф АСиУР		30.03.23г.
6	Кыдыкеева Д.Т.	зав каф ИК		30.03.23г.
7	Мусаалиева Р.Д.	зав. каф ЛиТ		30.03.23г.
8	Сулова А.Р.	зав. каф. Э		30.03.23г.

15. CHANGE REGISTRATION SHEET

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