

Joint Stock Company Academy of Logistics and Transport



**APPROVE**  
**US ALT decision dated**  
**2023 (Protocol № 13)**  
**President-Rector**  
**Amirgalieva S.N.**

**EDUCATIONAL PROGRAM**

Name: 6B07324 –CONSTRUCTION OF HIGHWAYS AND AIRFIELDS

Level of training: bachelor's degree

Code and classification of areas of study: 6B073-Architecture and construction

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

Date of registration in the Register: 24.05.2021

Registration number: 6B07300164

Almaty, 2023

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**1. СВЕДЕНИЯ О  
УТВЕРЖДЕНИИ ПРОГРАММЫ,  
РЕЦЕНЗЕНТАХ**


**РАССМОТРЕНИИ,  
РАЗРАБОТЧИКАХ,**

**СОГЛАСОВАНИИ  
ЭКСПЕРТАХ**

**И  
И**

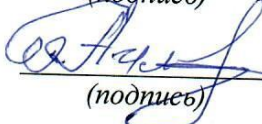
**1 РАЗРАБОТАНО:**

Ассистент профессор  
(должность)

  
(подпись)

Бихожаева Г.С.  
(Ф.И.О.)

РГП на ПВХ «Национальный центр  
качества дорожных активов» г.Алматы,  
инженер  
(должность)

  
(подпись)

АЙЫМБЕТОВ С.А.  
(Ф.И.О.)

Ассистент профессор  
(должность)

  
(подпись)

Дюсенгалиева Т.М.  
(Ф.И.О.)

Ассоц. профессор АЛУТ  
(должность)

  
(подпись)

Утешбаева А.А.  
(Ф.И.О.)

Студент гр. АДА-22-1  
(должность)

  
(подпись)

Сисембай А.Р.  
(Ф.И.О.)

**2 ЭКСПЕРТЫ:**

к.т.н., в.н.с. АО «КаздорНИИ»  
(должность)

  
(подпись)

Айтбаев К.А.  
(Ф.И.О.)

к.т.н., в.н.с. АО «КаздорНИИ»  
(должность)

  
(подпись)

Айдарбеков Е.К.  
(Ф.И.О.)

**3 РЕЦЕНЗЕНТ:**

Зав.каф. «ТСиПСМ»  
КазАДИ им.Л.Б.Гончарова  
(должность)



  
(подпись)

Бектурсунова Г.С.  
(Ф.И.О.)

**4 РАССМОТРЕНО И  
РЕКОМЕНДОВАНО:**

Заседание АК (кафедры) «СИ»  
Протокол №6 «15» 03 2023г

  
(подпись)


Исмагулова С.О.  
(Ф.И.О.)

Заседание КОК-УМБ «ТИ»  
Протокол №7 «15» 03 2023г

  
(подпись)

Чигамбаев Т.О.  
(Ф.И.О.)

Заседание УМС  
Протокол №4 «29» 03 2023г

  
(подпись)

Жармагамбетова М.С.  
(Ф.И.О.)

**5 УТВЕРЖДЕНО** решением Ученого Совета от « 30 » 03 2023г. № 13

**6 ОБНОВЛЕНА** 12 05 2022

## 2. NORMATIVE REFERENCES

The educational program is developed on the basis of the following normative legal acts and professional standards:

1. The Law of the Republic of Kazakhstan "On Education" dated July 27, 2007 No. 319-III (with amendments and additions as of March 27, 2023).
2. The 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. The sectoral qualifications framework of the field of "Education", approved by the Minutes of the meeting of the sectoral 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 No. 3.
4. State mandatory standard of higher and postgraduate education (Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated February 20, 2023 No. 66).
5. Qualification directory of positions of managers, specialists and other employees, approved by the Order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated August 12, 2022 No. 309.
6. Rules for organizing the educational process on credit technology of education in organizations of higher and (or) postgraduate education, approved by the Order of the Minister of MES RK No. 152 dated 20.04.2011. (with additions and amendments dated April 04, 2023 No. 145).
7. Classifier of training areas with higher and postgraduate education, approved by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018 No. 569 (with amendments and additions as of June 05, 2020).
8. The algorithm of inclusion and exclusion of educational programs in the Register of educational programs of higher and postgraduate education, approved by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated December 4, 2018 No. 665 (with additions and amendments as of December 23, 2020 No. 536).
9. RI-ALT-33 "Regulations on the procedure for developing an educational program of higher and postgraduate education".
10. Atlas of new professions: "Technologist of road construction from recycled plastic".

### 3. PASSPORT OF THE EDUCATIONAL PROGRAM

№	Field name	Note
1	Registration number	6B07300164
2	Code and classification of the field of education	6B07 Engineering, Manufacturing and Civil engineering
3	Code and classification of training areas	6B073 Architecture and construction
4	Code and group of the educational program (OP)	B074 – Urban planning, construction works and civil engineering
5	Name of the educational program (OP)	6B07324– Construction of highways and airfields
6	Type of educational program (OP)	New EP
7	The purpose of the educational program (OP)	Training of personnel with professional competencies for the automobile and road industry, which take into account the increasing quality requirements of specialists in the field of design, construction, maintenance and repair of highways and airfields with the use of new innovative technologies.
8	Level according to the International Standard Classification of Education (ISCED)	6
9	National Qualification Framework (NQF) level	6
10	Level according to the Industry Qualification Framework (ORC)	6
11	Distinctive features of the educational program (OP)	No
	Partner university, joint educational program (SOP)	-
	Partner university, double-degree educational program (DDOP)	-
12	Form of training	Full-time, full-time with the use of DOT
13	Language of instruction	Kazakh, Russian
14	Volume of loans	240
15	Academic degree awarded	Bachelor of Engineering and Technology in the educational program "6B07324 – Construction of highways and airfields"
16	Availability of an appendix to the license for the direction of training	KZ12LAA00025205 (010)
17	Availability of educational program accreditation (OP)	Available
	Name of the accreditation body	NU "Independent Agency of accreditation and rating"
	Validity period of accreditation	01.04.23 - 31.03.28

#### **4. THE GRADUATE'S COMPETENCE MODEL**

**The purpose of the educational program:** Training of personnel in demand in the labor market for the road industry for the operation of transport facilities, with innovative and professional competencies and skills to solve current and production problems.

##### **Objectives of the educational program:**

1. Formation of a person capable of professional activity to participate in the survey and design of highways and airfields, in the organization of works on the production of road-building materials, in the organization of works on the construction of highways and airfields, in the operation of highways and airfields.

2. Formation of the ability to carry out work on the continuation of the route on the ground and the restoration of the route in accordance with the project documentation; to maintain and execute the documentation of the survey party.

3. Formation of the ability: to design a route plan, longitudinal and transverse road profiles; to make technical and economic comparisons; to use modern computer equipment; to use personal computers and programs for them for the design of highways and airfields; to draw up design documentation; to navigate the main stages of preparing the field for development.

4. Formation of the ability to: reasonably choose the working schemes of mining equipment; establish the technological sequence of preparation of asphalt concrete, cement concrete and other mixtures according to the schemes; build, maintain and repair highways and airfields, independently form tasks and determine ways to solve them within professional competence; work with regulatory documents, standard design and technological documentation; use modern information technology;

5. Assistance in the formation of a graduate's readiness to: assess and analyze the condition of highways, airfields and their structures; develop a technological sequence of processes for the maintenance of various types of coatings and elements of road and airfield construction; perform calculations of the need for snow removal machines from highways and airfields and the distribution of deicing materials on them; develop a technological sequence of processes.

6. Formation of graduates' readiness to determine the types of work to be accepted and assess the quality of repair and maintenance, highways and airfields.

7. Assistance in the formation of graduates' readiness for the economical and safe use of natural resources, energy and materials in the design, construction, survey and design of highways and airfields

##### **Learning outcomes:**

LR1 - Describe the fundamental laws, fundamentals of electrical engineering and electronics, thinking, scientific worldview, using the rules of operation of power supply devices at transport construction facilities.

LR2 - To evaluate the stability, reliability and durability of transport structures based on the theorems and equations of motion of the mechanical system, hypotheses and strength criteria.

LR3 - To classify possible engineering and geological changes from the impact of erected load-bearing structures using computer technology, foundations and foundations, requirements for building materials depending on the conditions of their use, calculations of structural elements according to

operational conditions during the construction of bridges and tunnels.

LR4 – To develop a project of topographic survey of the object using the basics of geodesy, geoinformatics, design of transport infrastructure and information and communication technologies with the addition of these skills in the process of practice for use during the design of transport facilities.

LR5 - To argue solutions to the problems of labor protection and preservation of the ecosystem of the environment, in accordance with the legislative framework of the Republic of Kazakhstan and international requirements, using resource-saving technologies in the construction of transport facilities.

LR6 – To choose methods of economic justification of management decisions and assessment of their consequences, taking into account the principles and methods of resource management for acquiring skills in relevant areas of BI technology.

LR7 - To prepare the composition of specialized detachments for the production of works during the construction of the roadbed, taking into account the technology of construction and operation using road construction machines and new technologies.

LR8 - To compare transport and operational indicators in solving production tasks with the use of digital technology for the purpose of repair measures and the acquisition of practical skills.

LR9 – To substantiate the research of problems in the design of structures by implementing the tasks of transport support of logistics systems using state, Russian and foreign languages in the modern information space, increasing legal awareness and legal culture.

LR10 – To design highways, runways of airfields, their reconstruction aimed at increasing the capacity of the road, taking into account their condition, maintenance and forecasting for various categories of roads.

LR11 – To manage the processes of repair and maintenance of highways and airfields for the preservation, support of transport and operational indicators, taking into account the psychological characteristics of managers, performers with the preservation of historical and archaeological, natural landscape features of the area.

**Field of professional activity:** Automobile and aviation transport: design, construction, maintenance and repair of highways and airfields

**Objects of professional activity:**

- local executive authorities in the field of road transport and their regional structures;
- organizations and enterprises of the transport industry in the field of design, construction, maintenance and repair of highways and airfields, the highway network of highways, city and village streets and access roads of industrial enterprises;
- organizations and enterprises in the field of manufacturing of building materials and structures for objects of the transport and communication complex.

**Types of professional activity:**

- production and technological;
- organizational and managerial;
- project.

### **Functions of professional activity:**

1) Organization of manufacturing of building materials and structures for transport and communication facilities; organization of design, construction, maintenance and repair of highways and airfields; use of standard methods for calculating the reliability of structures of highways and airfields.

2) Management of production processes, analysis of the results of production activities; management of works on the implementation of design and construction works, maintenance and repair of highways and airfields; technical diagnostics of highways and airfields, the use of measuring instruments of road laboratories; analysis and evaluation of production and non-production costs or resources for high-quality design, construction, maintenance and repair of highways and airfields.

3) Development of new technologies, development of design and technological documentation using computer technology; calculation of strength and stability under various types of loading of highways and airfields, development of projects for new and reconstruction (modernization) of existing highways and airfields; selection of building materials for the manufacture of structures of highways and airfields, justification of technical solutions; development of technical specifications and technical conditions for projects of new and reconstruction (modernization) of existing highways and airfields, constructions of highways and airfields, technological processes of maintenance and repair of highways and airfields, means of technical diagnostics of highways and airfields using modern information technologies and computer programs; design of new constructions of highways and airfields, corresponding to the latest achievements of science and technology, safety requirements.

### **The list of specialist positions:**

Head of the Capital Construction Department, head of the production (technical, production and technical) department, head of the site (workshop), head of the logistics Department, Head of the Safety and Labor Protection Department, Head of the regulatory research Laboratory for Labor, Head of the tool Department, head of the production laboratory (production control), head of the quality control department, head of the road laboratory, site master (road master), work producer (foreman), master of industrial training, foreman, project manager, project manager, lead engineer, design engineer, process engineer (technologist), repair engineer, inventory engineer of buildings and structures, metrology engineer, labor organization engineer, labor rationing engineer, safety and labor protection engineer, engineer for environmental protection (ecologist), laboratory engineer, engineer, chief specialist, leading specialist, specialist, design technician, site technician, process technician, inventory technician of buildings and structures, metrology technician, labor technician, technician, laboratory technician, laboratory assistant

**Professional certificates obtained at the end of training:** Road worker, asphalt concrete worker.

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

### **In the course of training, students undergo various types of professional practice:**

- educational;
- production;
- pre-graduation.



### **Educational practice.**

During the internship, students should get an idea of the role of transport equipment in the country's economy, the variety of vehicles, the importance of mechanization and automation in increasing labor productivity, as well as an idea of the main technological processes of operation, maintenance and repair of transport equipment and technology of transport enterprises.

### **Production practice 1.**

During the period of practical training, the student receives certain practical knowledge, skills and abilities according to the chosen Educational program.

The objectives of the practical training are: deepening and consolidation of theoretical knowledge gained in the course of training; obtaining skills for the practical use of professional knowledge gained during theoretical training; training in skills for solving practical and managerial tasks; familiarity with the specifics of a bachelor's professional activity in a particular production; formation of a professional position of a specialist, a style of behavior, mastering professional ethics.

The objectives of industrial practice are to consolidate, deepen and systematize the knowledge gained during the study of theoretical basic and profile disciplines at a particular enterprise or organization and to acquire initial practical experience.

### **Pre-graduate practice 2.**

The content of the pre-graduate practice is determined by the topic of the thesis (project). During the pre-graduate practice, the student collects factual material about the production (professional) activities of the enterprise (organization) and uses it in the development of the graduation project (work). The practice involves working out a given problem (the topic of the thesis) on the materials of the activity of a particular enterprise (organization) with the student's independent formulation of conclusions, suggestions, recommendations, etc. In the course of practice, the student must show his knowledge and skills of a specialist, organizational skills, decision-making skills, performance discipline, responsibility, initiative.

**Final certification** it is carried out in the form of writing and defending a thesis (project) or preparing and passing a comprehensive exam. The purpose of the final certification is to evaluate the learning outcomes and the acquired competencies achieved upon completion of the study of the educational program of higher education.

The thesis (project) aims to identify and evaluate the analytical and research abilities of the graduate and is a generalization of the results of the student's independent study of an urgent problem in the field of his chosen specialty. The comprehensive exam program reflects integrated knowledge and key competencies that meet the requirements of the labor market in accordance with the educational program of higher education.

**5. MATRIX OF CORRELATION OF LEARNING OUTCOMES ACCORDING TO THE EDUCATIONAL PROGRAM WITH ACADEMIC DISCIPLINES/MODULES**

№	Name of the discipline	Number of credits	Matrix of correlation of learning outcomes according to the educational program with academic disciplines										
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	History of Kazakhstan	5											+
2	Philosophy	5											+
3	Foreign language	10			+						+		
4	Kazakh (Russian) language	10									+		
5	Information and communication technologies	5				+							
6	Sociology	8											
7	Cultural studies	2											+
8	Political Science	2											+
9	Psychology	2											+
10	Physical Culture	2											+
Module of the university component		5											
11	Ecology and life safety	5					+						
12	Methods of scientific research	5									+		
13	Fundamentals of Economics and	5						+					

	Entrepreneurship												
14	Fundamentals of law and anti-corruption culture	5									+		
15	Engineering Mathematics	9	+										
16	Applied Physics	9	+										
17	Fundamentals of computer modeling	6				+							
18	Building materials	6								+			
19	Geology, soil mechanics, foundations and foundations	6			+								
20	Building structures	6			+								
21	Electrical engineering and the basics of electronics	6	+										
22	Labor protection	6						+					
23	Educational practice (geodetic)	2									+		
24	Theoretical mechanics	6			+								
25	Engineering Mechanics 1	6			+								
26	Resistance of materials	6			+								
27	Engineering Mechanics 2	6			+								
28	Construction mechanics	6			+								
29	Engineering Mechanics 3	6			+								
30	Engineering geodesy	6						+					
31	Fundamentals of geoinformatics	6						+					
32	Introduction to the design of transport infrastructure facilities	6						+					
33	Fundamentals of design of transport facilities	6						+					
34	Road construction machinery and equipment	6									+		
35	Mechanization of the automobile and road economy	6									+		

36	Bridges and tunnels on highways	9			+								
37	Highways	9										+	
38	Airfields	6										+	
39	Survey and design of highways	9								+			
40	Maintenance and repair of highways	9											+
41	Operation of highways	9											+
42	Production practice 1	3								+			
43	Production practice 2	4								+			
44	Technology of construction of highways and airfields	6							+				
45	Technology of automobile and road construction	6							+				
46	Organization of construction of transport infrastructure facilities	6							+				
47	Organization and planning of construction of transport facilities	6							+				
48	Reconstruction of highways	6										+	
49	Modernization of highways	6										+	
50	Managerial economics	3						+					
51	Transport logistics	3									+		
52	Resource saving in transport	3					+						
53	Time Management (Minor)	3						+					
54	Digital diagnostics of construction objects (Minor)	3								+			
55	Power BI Business Analytics (Minor)	3					+						
56	FINAL CERTIFICATION: Writing and defending a thesis	8	+	+	+	+	+	+	+	+	+	+	+

## 6. STRUCTURE OF THE BACHELOR'S DEGREE PROGRAM

№ п/п	Name of cycles of disciplines	Total labor intensity	
		in academic hours	in academic credits
<b>1</b>	The cycle of general education disciplines (OOD)	<b>1680</b>	<b>56</b>
<b>1)</b>	is a mandatory component	<b>1530</b>	<b>51</b>
	History of Kazakhstan	150	5
	Philosophy	150	5
	Foreign language	300	10
	Kazakh (Russian) language	300	10
	Information and Communication Technologies (in English)	150	5
	Module of socio-political knowledge (sociology, political science, cultural studies, psychology)	240	8
	Physical Culture	240	8
<b>2)</b>	<b>Component of choice</b>	<b>150</b>	<b>5</b>
2	Cycle of basic disciplines (DB)	at least 5280	at least 176
<b>1)</b>	<b>University component</b>		
<b>2)</b>	<b>Professional practice</b>		
3	Cycle of profile disciplines (PD)		
<b>1)</b>	<b>University component</b>		
<b>2)</b>	<b>Professional practice</b>		
4	Additional types of training (DVO)		
<b>1)</b>	<b>Component of choice</b>		
5	Final certification		
<b>1)</b>	<b>Writing and defending a thesis, graduation project, or preparing and passing a comprehensive exam</b>	at least 240	at least 8
	<b>Total</b>	<b>at least 7200</b>	<b>at least 240</b>

## 7. CURRICULUM FOR THE ENTIRE PERIOD OF STUDY

JSC "Academy of Logistics and Transport"

### CURRICULUM

Form of study: full-time

Training area:  
6B073-Architecture and Construction

Duration of training: 4 years

Group of educational programs:  
6B074-Urban planning, construction projects  
works and civil engineering

Name of the educational program:  
6B07324-Automobile construction  
roads and airfields

Admission: 2023

Degree: Bachelor of Engineering and Technology



№	Discipline code	Name of cycles and disciplines	Total labor intensity		Form of control, 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			SRD			1st course		2nd course		3rd year		4th year																								
								lectures	practical features	Laboratory	SRD	SRD	SRD	1 sem.	2 sem.	3 sem.	4 sem.	5 sem.	6 sem.	7 sem.		8 sem.	9 sem.																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23																						
<b>CYCLE OF GENERAL EDUCATION SUBJECTS (GED):</b>																																												
1.1	Required component:		1530	51	13		1530	120	258	15	120	917	21	16	7	7	0	0	0	0	0	0																						
1.1.1.	23-0-06-AK	History of Kazakhstan	150	5	3		150	30	15		8	87											SRSPV																					
1.1.2.	23-0-06-FE	Philosophy	150	5	4		150	30	15		6	87					5						SRSPV																					
1.1.3.	23-0-06-KA	Foreign language	300	10	1,2		300		00		90	184	5	5									YAP																					
1.1.4.	23-0-06-KA	Kazakh (Russian) language	300	10	1,2		300		00		90	184	5	5									YAP																					
1.1.5.	23-0-06-IT	Informative and communication technologies	150	5	1		150	30		15	8	67	5										ICTs																					
1.1.6.	23-0-06-Soc	Social-political knowledge module	240	8	1,3	240	7	15		8	30												SRSPV																					
	23-0-06-Soc	Sociology					8	15		8	20			4											SRSPV																			
	23-0-06-Pol	Cultural Studies					7	15		8	30			4												SRSPV																		
	23-0-06-Pol	Political Science					8	15		8	29																SRSPV																	
1.1.7.	23-0-06-FH	Psychology	240	8	1,2,3,4		240		66		32	120	2	2	2	2							SRSPV																					
1.2.	Component of your choice:		150	5	1	8	150	30	15	0	8	97	0	0	5	8	0	0	0	0	0	0	0																					
1.2.1.	23-0-06-EC	Module of a component for choosing a COO:	150	5	3	150	30	15	0	8	97	0	0	5	8	0	0	0	0	0	0	0	ATSDSD																					
	23-0-06-MS	Ecology and life safety																																								SRSPV		
	23-0-06-EP	Methods of scientific research																																										LMT
	23-0-06-LAW	Fundamentals of economics and entrepreneurship																																										SRSPV
		Fundamentals of law and anti-corruption culture																						SRSPV																				
TOTAL for the COO cycle:			1680	66	14	0	1680	180	273	18	128	1014	21	16	12	7	0	0	0	0	0	0	0																					
<b>CYCLE OF BASIC DISCIPLINES (DB):</b>																																												
2.1.	University component:		1680	66	9		1680	270	195	75	64	1016	9	15	6	2	6	12	6	0	0	0	0																					
2.1.1.	23-0-06-M	Engineering Mathematics	270	9	2		270	45	45		8	172												CI																				
2.1.2.	23-0-06-Ph	Applied Physics	270	9	1		270	45	30	15	8	172	9											CI																				
2.1.3.	23-0-06-Comp	Fundamentals of computer modeling	180	6	2		180	30	30		8	112			6									ICTs																				
2.1.4.	23-0-06-VM	Building materials	180	6	3		180	30	15	15	8	112			6									"																				
2.1.5.	23-0-06-VM	Geology, soil mechanics, foundations and foundations	180	6	5		180	30	15	15	8	112					6							"																				
2.1.6.	23-0-06-VM	Building structures	180	6	6		180	30	30		8	112					6							"																				
2.1.7.	23-0-06-EE	Electrical engineering and basic electronics	180	6	6		180	30	15	15	8	112					6							E																				
2.1.8.	23-0-06-OT	Labor protection	180	6	7		180	30	15	15	0	112							6					ATSDSD																				
2.1.9.	23-0-06-Ph	Training practice (geodesic)	60	2	4		60										2							"																				
2.2.	Component of your choice:		1080	36	6		1080	180	150	60	48	672	0	0	12	12	12	0	0	0	0	0	0	0																				
2.2.1.	23-0-06-VM	Theoretical mechanics	180	6	3	180	30	30	8	112	0	0	12	12	12	0	0	0	0	0	0	0	0																					
	23-0-06-VM	Engineering mechanics 1																																										
2.2.2.	23-0-06-VM	Material resistance	180	6	4	180	15	30	15	8	112	0	0	12	12	12	0	0	0	0	0	0	0																					
	23-0-06-VM	Engineering mechanics 2																																										


2.2.1	21-0-B-V-0966 21-0-B-V-0967	Construction mechanics Engineering mechanics 2	180	8	5		180	30	30	0	112				6							
2.2.4	21-0-B-V-0968 21-0-B-V-0969	Engineering geodesy Fundamentals of metrologics	180	6	3		180	30	15	15	0	112		6								
2.2.5	21-0-B-V-0970 21-0-B-V-0971a	Basics of designing transport structures Introduction to the design of transport infrastructure facilities	180	8	4		180	15	15	30	0	112		6								
2.2.6	21-24-0-B-V-0980 21-24-0-B-V-0981	Road construction machinery and equipment Mechanization of automobile and road facilities	180	6	5		180	30	30	0	112				6			ATG424C				
<b>TOTAL by CB cycle:</b>			2760	32	15	0	2760	420	345	135	112	1688	9	15	18	14	18	12	6	0	0	
<b>3. CYCLE OF PROFILE DISCIPLINES (PD):</b>																						
<b>3.1. University component:</b>			1740	58	8		1740	255	255	0	48	372	0	0	0	0	0	0	0	0	0	
3.1.1	21-24-V-1K-17AD	Bridges and tunnels on highways	270	8	4		270	45	45	0	172				6							
3.1.2	21-24-V-1K-AD	Highways	270	8	0		270	45	45	0	172				6							
3.1.3	21-24-B-VN-A	Airfields	180	6	0		180	30	30	0	112				6							
3.1.4	21-24-B-VN-EAD	Road surveys and design	270	8	7		270	45	45	0	172				6							
3.1.5	21-24-B-VN-EAD	Maintenance and repair of highways	270	8	7		270	45	45	0	172				6							
3.1.6	21-24-B-VN-EAD	Operation of highways	270	8	8		270	45	45	0	172				6							
3.1.7	21-0-B-VK-0983	Production practice 1	90	3	0		90											6				
3.1.8	21-0-B-VK-0984	Production practice 2	120	4	0		120										6					
3.2	<b>Component of your choice:</b>		610	27	6	0	610	135	135	0	48	492	0	0	0	0	0	0	0	0	4	
3.2.1	21-24-B-VK-79ADA 21-24-B-VK-7A03	Technology of construction of highways and airfields Technology of automobile and road construction	180	6	6		180	30	30	0	112				6							
3.2.2	21-0-B-VK-0907a 21-0-B-VK-0907b	Organization of construction of transport infrastructure facilities Organization and planning of construction of transport structures	180	6	7		180	30	30	0	112				6							
3.2.3	21-24-B-VK-EAD 21-24-B-VK-EAD	Road reconstruction Road modernization	180	6	0		180	30	30	0	112				6							
<b>Minor program 1 "Resource Management"</b>																						
3.2.4	21-0-B-UE	Managerial economics	90	3	0		90	15	15	0	52				3							LMT
3.2.5	21-0-B-TL	Transport logistics	90	3	0		90	15	15	0	52				3							LMT
3.2.6	21-0-B-RT	Resource saving in transport	90	3	7		90	15	15	0	52				3							ITs
<b>Minor program 2 "Digital competencies"</b>																						
3.2.4	21-0-B-TM	Time management	90	3	0		90	15	15	0	52				3							LMT
3.2.5	21-0-B-TA003	Digital diagnostics of construction sites	90	3	0		90	15	15	0	52				3							
3.2.6	21-0-B-BAF03	Power BI Business Intelligence	90	3	7		90	15	15	0	52				3							ICTs
<b>TOTAL for the PD cycle:</b>			2550	85	14	0	2550	390	390	0	96	1464	0	0	0	9	12	18	27	15	4	
<b>TOTAL FOR THE THEORETICAL COURSE OF STUDY (MSW):</b>			6990	233	43	0	6990	960	1100	150	336	4160	30	31	30	30	38	30	33	15	4	
4	21-0-B-VN-A	FINAL CERTIFICATION	240	8																	8	
<b>TOTAL FOR THE ENTIRE TRAINING PERIOD:</b>			7230	241									30	31	30	30	38	33	18	12		
<b>5. ADDITIONAL TYPES OF TRAINING (DVE):</b>																						
5.1	21-0-B-DVD-V	Volunteering	30	1	1		30	10	10	0	12	1										
5.2	21-0-B-DVD-FG	Financial literacy	90	3	0		90	15	15	0	52			3								LMT

AGREED:

Vice-Rector for AD  Zharmaganbetova M. S.

DAPC Director  Lipskaya M. A.

DEVELOPED BY:

Director of the TI Institute  Chigambaev T. O.

Head of the Department "TI"  Ismagalova S. O.

## 8. CATALOG OF DISCIPLINES OF THE UNIVERSITY COMPONENT

**EDUCATIONAL PROGRAM**

**6B07324 – Construction of highways and airfields**

**Education level: Bachelor's degree**

**Duration of study: 4 years**

**Admission year: 2023**

Module	Cycle	Component	Name of the discipline	Total labor intensity		Term	Learning outcomes	A brief description of the disciplina	Prerequisites	Post-requirements
				in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10	11
Module 2 - Natural science competencies	DB	VK	Engineering Mathematics	270	9	2	RO1	Mastering the mathematical apparatus for solving theoretical and applied problems of a specific profile, getting an idea of mathematical modeling and interpretation of the solutions obtained. The questions of linear algebra, analytical geometry, mathematical analysis, differential equations, series theory are considered. Calculation and graphic work is performed within the discipline. Methods of active learning – teamwork, "brainstorming".	Basic school knowledge in mathematics	Engineering mechanics 1,2,3,Resistance of materials,Theoretical mechanics,Survey and design of highways
	DB	VK	Applied Physics	270	9	1	RO1	Formation of students' skills and abilities when using fundamental laws, theories of classical and modern physics, as well as methods of physical research, thinking, scientific worldview, with independent cognitive activity, be able to simulate physical situations using computer technology and ideas about the modern natural-science picture of the world. As part of the discipline, settlement and graphic work is performed. Labs are performed on the Coursera platform. Methods of active learning - teamwork, "brainstorming".	Basic school knowledge of physics	Engineering mechanics 1,2,3, Resistance of materials



1	2	3	4	5	6	7	8	9	10	11
Module 6 – Core competencies	DB	VK	Fundamentals of computer modeling	180	6	2	RO 4	Competencies are formed on the purpose of modeling tools, hardware and software tools, as well as in the development of object models for various purposes, as well as the programming languages Python, Java, etc. Within the framework of the discipline, interactive teaching methods, the calculation-analytical method, the case-task method, game methods are used.	Engineering Mathematics	Building structures, Technology of construction of highways, Bridges and tunnels on highways
	DB	VK	Building materials	180	6	3	RO 3	Forms basic knowledge about the types of building materials, methods of their production, properties and applications of various building materials, familiarization with standard methods of testing building materials and determining their properties, standardization of requirements for building materials depending on the conditions of their use. Within the framework of the discipline, interactive methods of teaching case-learning, discussion are used.	Engineering Mathematics, Applied Physics	Geology and mechanics of soils, foundations and foundations, Technology of construction of highways, Highways, Operation of highways
Module 6 – Core competencies	PD	VK	Geology, soil mechanics, foundations and foundations	180	6	5	RO 3	To form the necessary set of knowledge about engineering-geological processes and phenomena, properties of soils, defects arising from the joint work of soils, foundations and foundations, stressed conditions of the soils of the foundations, principles of the work of structures on modern field and laboratory installations and devices, to solve geotechnical problems, about the general laws and principles of the construction of structures. Guest lectures, calculation and analytical method are used.	Engineering Mathematics , Applied Physics	Engineering mechanics 1,2,3, Resistance of materials
	DB	VK	Building structures	180	6	6	RO 3	Forms basic knowledge of calculation and construction of load-bearing structures using computer technologies (Excel, AutoCAD, Revit). Also, to teach how to choose the right materials, the shape of sections, the design scheme of the structure, based on the purpose and purpose of operation, to develop	Engineering Mathematics , Applied Physics	Engineering mechanics, Resistance of materials, Highways, Operation of highways, Technology of construction of highways

								constructive solutions for newly erected or reinforced transport structures. Within the framework of the discipline, interactive teaching methods, the computational and graphical method are used.		
Module 6 – Core competencies	DB	VK	Electrical engineering and the basics of electronics	180	6	6	RO 1	Studies electrical circuits of direct, alternating and three-phase currents, the principle of operation, purpose and rules of operation of a transformer and electrical machines, methods of measuring electrical quantities, the use of semiconductor diodes in rectification circuits and logic elements. As a result of studying the discipline, students should be able to apply the basic laws and ratios of electrical circuits, read electrical and electronic circuits, understand the purpose of the main components of electrical equipment and electronic circuits, evaluate the accuracy of measurement tools and results, and carry out verification of electrical measuring devices. Within the framework of the discipline, interactive teaching methods, computational and analytical method, and the method of case tasks are used.	Engineering Mathematics , Applied Physics	Bridges and tunnels on highways
	DB	VK	Labor protection	180	6	7	RO 5	Training of specialists on the theoretical and practical foundations of safety, safety and facilitation of working conditions at its maximum productivity, on the legislative and regulatory framework in the field of labor protection. Teaching methods - analysis of specific situations (case-study), group discussions.	Engineering Mathematics, Applied Physics, Theoretical Mechanics, Building Materials	Engineering mechanics 1,2,3, Geology and mechanics of soils, foundations and bridges and tunnels on highways
	DB	VK	Educational practice (geodetic)	60	2	4	PO8	The organization of educational practice is aimed at providing bachelors with familiarization with the fields of professional activity and training profiles, with the ability to geodetic survey of the terrain, forward and reverse, leveling survey, reference to reference points, removal of points and elevations from the map, solving typical engineering and geodetic tasks.		

	DB	VK	Bridges and tunnels on highways	270	9	4	PO3	Teaches the skills of designing and calculating road bridges and pipes, distillation tunnels, taking into account complex engineering-geological and hydrological conditions, seismic and man-made impacts, designing schemes 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. Within the framework of the discipline, field classes are provided to the branch of the department and guest lectures by top managers.		
	DB	VK	Educational practice (geodetic)	60	2	4	RO8	The organization of educational practice is aimed at providing bachelors with familiarization with the fields of professional activity and training profiles, with the ability to geodetic survey of the terrain, forward and reverse, leveling survey, reference to reference points, removal of points and elevations from the map, solving typical engineering and geodetic tasks.	Engineering Mathematics , Applied Physics	Survey and design of highways
Module 6 – Core competencies	DB	VK	Artificial structures on highways	270	9	4	RO 3	Forms practical skills of using modern methods and methods of design and fundamentals of mathematical modeling of artificial structures in transport, taking into account static and dynamic loads, natural and man-made impacts, complex engineering-geological and hydrological conditions, allowing to identify the most rational parameters of elements of load-bearing structures to ensure the necessary degree of stability, durability, reliability and efficiency of the structure. Within the framework of the discipline, field classes are provided to the branch of the department and guest lectures by top managers.	Engineering Mathematics, Applied Physics, Engineering Geodesy	Survey and design of highways, Organization and planning of transport infrastructure facilities
	PD	VK	Highways	270	9	5	RO10	To acquaint with the basics of management, technological processes of construction and operation of transport facilities that meet the	Artificial structures on highways,	Survey and design of highways, Organization of construction of

								requirements of standards and regulatory documents, road terminology, structural and transport-economic indicators, patterns of road traffic of a car, methods of designing a highway, city streets and roads and is engaged in the improvement and development of transport infrastructure facilities, carries out technical supervision of construction and repair objects. Interactive teaching methods are used.		transport infrastructure facilities
Module 6 – Core competencies	PD	VK	Airfields	180	6	6	RO 10	Studies the main provisions and patterns in the field of assessing the condition, forecasting, maintenance and repair of airfields, with the basics of the activities of organizations engaged in airport activities for airfield support in modern conditions, and also instills practical skills in performing practical calculations when solving specific production tasks. Methods of active learning – performing individual computational and graphical tasks.	Fundamentals of computer modeling, Highways	Survey and design of highways and airfields, Organization and planning of transport facilities
	PD	VK	Survey and design of highways	270	9	7	RO 9	To familiarize with the main provisions of building codes and regulations and other regulatory documents on the design, technology and patterns of traffic flows of cars, principles of road tracing, methods of designing structures of road drainage and roadbed, calculations of the selection of holes of drainage artificial structures, classification of relief by the complexity of tracing, sources of moistening of the roadbed. Methods of active learning – performing individual computational and graphical tasks.	Fundamentals of computer modeling, Highways	Technology of construction of highways, Operation of highways, Fundamentals of computer modeling, Highways

Module 6 – Core competencies	PD	VK	Maintenance and repair of highways	270	9	7	RO 11	Applies the basics of ensuring the safe passage of cars with the use of participants in the operation of existing roads, classification of highways and city streets and methods for determining the condition of engineering structures, organization of winter and spring-summer-autumn maintenance, diagnostic methods for monitoring the implementation of technological processes and acceptance of repairs performed. Methods of active learning–performing individual computational and graphical tasks.	Technology of construction of highways, Operation of highways	Reconstruction of highways
	PD	VK	Operation of highways	270	9	8	PO8	Applies the basic principles of engineering solutions in the operation of highways, the procedure for visual inspection of a road section and drawing up lists of defects in specific sections, methods of calculation and selection of repair work options, methods of substantiating geometric and technical parameters of road structures, assessing the technical condition of highways and their arrangements. Interactive teaching methods, computational and analytical method are used.	Highway construction technology, maintenance and repair of highways	Reconstruction of highways
Module 6 – Core competencies	PD	VK	Production practice 1	90	3	6	RO8	The main objectives of industrial practice are: consolidation of theoretical knowledge and practical skills in the chosen educational program in production conditions, acquisition of organizational work experience, obtaining a working specialty, formation of practical skills and competencies in the process of mastering the bachelor's program. It is conducted in the practice bases at enterprises according to this educational program.	Survey and design of highways, Artificial structures on highways	Pre-graduate practice, Final certification
	PD	VK	Production practice 2	120	4	9	RO8	The purpose of the practice for bachelors is to ensure the relationship between the theoretical knowledge gained during the assimilation of the chosen educational program and practical activities. The objectives of	Artificial structures on highways, The construction of highways, the construction of	Final certification

								<p>this practice are to consolidate and deepen the theoretical knowledge gained by students in the learning process, to collect information for writing a final qualifying work, to study best practices at the enterprise, as well as to gain experience in independent research work, mastering various methods of scientific work. It is conducted in the practice bases at enterprises according to this educational program.</p>	<p>airfields, The survey and design of highways; Technology of automobile and road construction</p>	
			Final certification	240	8	9	RO1-RO 12	<p>Целью итоговой аттестации является оценка результатов обучения и освоенных компетенций, достигнутых по завершению изучения образовательной программы высшего образования.</p>	9	-
<b>Total</b>				<b>5280</b>	<b>176</b>					

## 9.CATALOG OF DISCIPLINES OF THE COMPONENT BY CHOICE

### EDUCATIONAL PROGRAM 6B07130 – Highways and airfields

Education level:

bachelor course

Duration of study: 4 years

Module	Cycle	Component	Name of the discipline	Total labor intensity		Term	Results of the study	Brief description of the discipline	Prerequisites	Post-requirements
				in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10	11
Module 1 – General educational competencies	ODD	SQ	Ecology and life safety	150	5	3	RO5	The study of the basic environmental concepts, environmental problems and approaches to their solution, sources and types of environmental pollution by enterprises, the principles of standardizing the quality of atmospheric air and water, the main 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).	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology	Final certification
	ODD	SQ	Scientific research methods				RO9	Obtaining theoretical and applied knowledge by students on the methods of scientific research of problems in the studied area, training specialists with cognitive skills in the field of science, forming deep ideas about the content of scientific activity, its methods and forms of knowledge.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology	Final certificatio
	ODD	SQ	Basics of economics and entrepreneurship				RO 9	Studies the activities of enterprises in various types of market, the model of equilibrium and functioning of the market, state regulation of prices and tariffs. Examines the concept of entrepreneurship and the limits of its legal regulation, conditions for the development of entrepreneurship, organizational and legal forms of doing business, business planning, business secrecy, social responsibility of entrepreneurship. Active teaching methods: case methods; business role-playing games, group work.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology	Final certification
	ODD	SQ	Basics of law and anti-corruption				RO 6	Improving public and individual legal awareness and legal culture of students,	History of Kazakhstan, Kazakh (Russian, foreign)	Final certification

			culture					as well as the formation of a knowledge system and a civic position on combating corruption as an antisocial phenomenon. As a result of studying the course, the student must master the fundamental concepts of law, the constitutional structure of the 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 case of their violation.	language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology	
Module 6 - Core competencies	DB	SQ	Theoretical mechanics	180	6	3	RO 2	To familiarize with the basic concepts, laws and theorems that make it possible to compose and study equations describing the behavior of mechanical systems, the development of logical thinking and understanding that the laws of mechanics express the laws of mechanical motion of bodies expressed in mathematical form, the ability to record a specific phenomenon in mathematical form, the formation of practical skills in applying the basic methods of mechanics in the study of motion and balances of mechanical systems in the study of disciplines of the professional cycle and solving specific problems that one has to face in professional activity. Methods of active training – execution and protection of individual calculation and graphic works.	Engineering Mathematics, Applied Physics	Engineering mechanics 2,3, Geology and mechanics of soils, foundations, Artificial structures on highways,
	DB	SQ	Engineering Mechanics 1	180	6	3	RO 2	Formation of logical thinking and scientific foundation of engineering education. The study of the laws of motion and equilibrium of material bodies, the construction of mathematical models of the behavior of mechanical systems using the theorems of mechanics. Application of methods for studying the equilibrium and motion of mechanical systems for solving technical problems. Methods of active learning – the use of interactive tools, a blitz survey – a series of short questions, the performance of individual calculation and graphic works.	Engineering Mathematics, Applied Physics	Engineering mechanics 2,3, Geology and mechanics of soils, foundations, Artificial structures on highways,
	DB	SQ	Resistance of	180	6	4	RO 2	Formation of a complex of knowledge		Geology and mechanics



Module 6 - Core competencies			materials					in the field of engineering calculations with simple and complex resistance to strength, rigidity and stability of structural elements that ensure the required reliability and safety of products under static and dynamic loads using forms of static equilibrium conditions, using methods of differential and integral calculus. Methods of active learning – performing individual computational and graphical tasks.	Engineering mechanics 1, Geology and mechanics of soils, foundations and foundations	of soils, foundations and foundations, Artificial structures on highways
	DB	SQ	Engineering Mechanics 2	180	6	4	RO 2	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 state in structural elements, constructing design diagrams of machine parts and product calculations to ensure reliability and cost-effectiveness requirements under the influence of static and dynamic loads. Methods of active learning – performing individual computational and graphical tasks.	Engineering mechanics 1 Geology and mechanics of soils, foundations and foundations	Geology and mechanics of soils, foundations and foundations, Artificial structures on highways,
Module 6 - Core competencies	DB	SQ	Construction mechanics	180	6	5	RO 2	Formation of the basic laws of deformation of core systems that make up the frame of structures when exposed to external forces in order to ensure strength, stability, basic methods of calculation of standard structures and structures. Formation of design skills of standard structures related to the selection of the design scheme and the determination of the most loaded structural elements and the calculation of internal forces and stresses.	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2	Geology and mechanics of soils, foundations and foundations, Artificial structures on highways, Construction of highways
	DB	SQ	Engineering Mechanics 3	180	6	5	RO 2	Formation of design skills of structures and structures related to the selection of the design scheme and the determination of the most loaded structural elements and the calculation of internal forces and stresses, the basic laws of deformation of core systems that make up the frame of structures when exposed to external forces to ensure strength, stability, basic methods of calculation of standard structures and structures.	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2	Geology and mechanics of soils, foundations and foundations, Artificial structures on highways,, Construction of highways
	DB	SQ	Engineering	180	6	3	RO 4	Studies the composition and technology	Engineering Mathematics,	Bridges and tunnels on

Module 6 - Core competencies			geodesy					of geodetic works that provide surveys, design, construction, operation of structures, the basic requirements for solving typical engineering and geodetic tasks, their geometric essence. Obtains the skills of reading a topographic map, solving on its basis the corresponding tasks of both graphical and mathematical computational nature. Interactive teaching methods are used within the discipline.	Applied Engineering 1,2,3	Physics, Mechanics	highways, Highways, Technology of construction of highways and airfields
	DB	SQ	Fundamentals of geoinformatics	180	6	3	RO 4	The study of general information about geoinformation systems, basic terms and concepts, issues of data input and output, their digitization, ways of presenting spatial and attribute information, brief characteristics of the main GIS, their advantages and disadvantages, general ideas about GIS software, basic geoinformation technologies and techniques for preparing initial information, creating and editing objects. Interactive teaching methods are used within the discipline.	Engineering Applied Engineering 1,2,3	Mathematics, Physics, Mechanics	Bridges and tunnels on highways, Highways, Technology of construction of highways and airfields
Module 6 - Core competencies	DB	SQ	Fundamentals of design of transport facilities	180	6	4	RO 4	Study of the basic rules (methods) for constructing and reading drawings, methods for solving metric and positional problems, rules for design documentation in accordance with the ESCD standards, mastering the skills of taking sketches, images of technical products, drawing drawings using graphical tools (AutoCAD, Compass 3D). Within the framework of the discipline, software training, computer modeling and practical analysis of the results are provided.	Engineering Applied Engineering Structures	Mathematics, Physics, Fundamentals of Computer Modeling, Building	Bridges and tunnels on highways, Highways, Technology of construction of highways and airfields
	DB	SQ	Introduction to the design of transport infrastructure facilities	120	4	4	RO 4	Principles and methods of graphic and geometric modeling of engineering tasks, general requirements of the ESKD, SPDS and other regulatory documents for the execution and design of drawings, modern methods of automation of graphic works, the possibility of automated creation of geometric models of spatial objects and the execution of drawings. Creating 2D and 3D models within graphics systems (Compass 3D, Solidworks). The discipline provides software training,	Engineering Applied Engineering 1,2,3	Mathematics, Physics, Mechanics	Мосты и тоннели на автомобильных дорогах, Автомобильные дороги, Технология строительства автомобильных дорог и аэродромов

								computer modeling and practical analysis of the results.		
Module 6 - Core competencies	DB	SQ	Road construction machinery and equipment	180	6	5	RO 7	Mastering students' knowledge in the field of nomenclature of road construction machinery and equipment, their purpose and principle of operation, optimization of operating modes under specified operating conditions to achieve maximum efficiency, compliance with safety requirements and environmental conservation. Within the framework of the discipline, interactive teaching methods, calculation and graphic works are used.	Ecology and life safety, Fundamentals of Computer modeling, Building Materials, Electrical Engineering and fundamentals of Electronics	Labor protection, Foundations and foundations, Technology of automobile and road construction, Organization of construction of transport infrastructure facilities
	DB	SQ	Mechanization of the automobile and road economy	180	6	5	RO 7	Mastering students' knowledge in the field of nomenclature of machines and equipment for the automobile and road economy, their purpose and principle of operation, optimization of operating modes under specified operating conditions to achieve maximum efficiency, compliance with safety requirements and environmental conservation. Within the framework of the discipline, interactive teaching methods, calculation and graphic works are used.	Ecology and life safety, Fundamentals of Computer modeling, Building Materials, Electrical Engineering and fundamentals of electronics	Labor protection, Foundations and foundations, Technology of automobile and road construction, Organization of construction of transport infrastructure facilities
Module 6 - Core competencies	DB	SQ	Technology of construction of highways and airfields.	180	6	6	RO 7	Formation of knowledge in the field of the construction of the roadbed by the methods of filling embankments and the development of excavation, methods of distribution of earth masses, selection of basic and auxiliary machines, technology of excavation, calculation of the composition of specialized detachments for the production of works, the construction of a linear calendar schedule for each layer of pavement. Interactive teaching methods, computational and analytical method are used.	Ecology and life safety, Engineering Geodesy, Road construction machinery and equipment, Construction materials, Highways, Airfields.	Organization of construction of transport infrastructure facilities in Russia, Operation of highways, Reconstruction of highways.
	DB	SQ	Technology of automobile and road construction	180	6	6	RO 7	To acquaint with the basic theoretical and practical provisions, technologies for the construction of highways and airfields, modern construction conditions with the use of new technologies for the production of works, methods of teaching problem solving and the formation of general competencies by performing tasks	Ecology and life safety, Engineering geodesy, Road construction machinery and equipment, Building materials, Highways, Airfields	Organization of construction of transport infrastructure facilities, Operation of highways, Reconstruction of highways

								according to the variant. Interactive teaching methods, computational and analytical method are used.		
Module 6 - Core competencies	DB	SQ	Organization of construction of transport infrastructure facilities	180	6	7	RO 7	Development of a systematic understanding of construction processes and types of work, the principles of their implementation, the requirements for the organization of work of the working link or team, in compliance with the requirements of safety and environmental protection, the fundamental principles of planning, industriality, complex mechanization and automation of production, the flow of construction, all seasonality of work	Road construction machinery and equipment, Construction materials, Highways, Airfields	Reconstruction of highways
	DB	SQ	Organization and planning of the construction of transport facilities	180	6	7	RO 7	Development of a systematic understanding of the construction processes and types of work, the principles of their implementation, the requirements for the organization of work of the working link or team, in compliance with the requirements of safety and environmental protection, the fundamental principles of planning, industriality, complex mechanization and automation of production, the flow of construction, all seasonality of work.	Road construction machinery and equipment, Construction materials, Highways, Airfields	Reconstruction of highways
Module 6 - Core competencies	PD	SQ	Reconstruction of highways	180	6	8	RO 10	Apply various methods of assessing the condition of highways and reconstruction measures, technological solutions for earthworks, reconstruction of road coverings of all types for various categories of roads, taking into account the peculiarities of technology and mechanization of the regeneration of road coverings and coatings using modern materials. Interactive teaching methods, computational and analytical method are used.	Road construction machinery and equipment, Construction materials, Technology of construction of highways and airfields, Organization of construction of transport infrastructure facilities	Final certification
	PD	SQ	Modernization of highways	180	6	8	RO 10	To teach students to correctly evaluate possible options for the technology of work depending on the condition of individual elements of the highway, on local soil-geological and climatic conditions, to take into account the increasing requirements of ecology and safety, especially when jointly carrying out work on the transfer and restructuring of engineering	Technology of construction of highways and airfields, Organization of construction of transport infrastructure facilities	Final certification

								communications with the reconstruction of highways. Interactive teaching methods, computational and analytical method are used.		
	PD	SQ	Managerial Economics (Minor)	90	3	5	RO 6,	Formation of the conceptual apparatus and development of skills of economic analysis using modern models and laws of economics, consideration of economic problems and tasks facing the head of the company. The study of this discipline will allow students to obtain and develop knowledge in the field of analytical studies of economic, technological and technical parameters of the enterprise, as well as will allow them to master the skills of applying special methods of economic justification of management decisions and assessing their consequences. Methods of active learning are used - situational tasks, case method.used - situational tasks, case method.	Fundamentals of Economics and Entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
	PD	SQ	Time management	90	3	5	RO 6	Formation of general ideas about the essence and types of time management, principles and methods of time resource management for more successful implementation of professional activities. Methods of active learning are used - situational tasks, case method	Fundamentals of Economics and Entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
Module 6 - Core competencies	PD	SQ	Transport logistics (Minor)	90	3	6	RO 9	The study of the main provisions of transport support of logistics systems, activities in the field of transportation, covering the entire range of operations and services for the delivery of goods from the manufacturer of products to the consumer, the principles of design and construction of logistics systems. Mastering the skills of optimization and organization of rational cargo flows, their processing in specialized logistics centers, ensuring an increase in their efficiency, reducing unproductive costs and expenses. The teaching methods are: solving problems, conducting thematic colloquiums, seminars "brainstorming". Within the framework of the discipline, guest lectures are conducted by leading specialists of transport and logistics companies.	Fundamentals of Economics and Entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
	PD	SQ	Digital	90	3	6	RO 8	Studies modern methods of diagnostics,	Bridges and tunnels on	Technology of

			diagnostics of construction objects					monitoring and testing of construction objects using innovative technologies, modern geodetic means of periodic and automatic monitoring (GPS measurements, total station, leveling, laser scanning). Methods of active learning are used - situational tasks, case method.	highways, Highways	construction of highways and airfields, Organization of construction of transport infrastructure facilities
	PD	SQ	Resource saving in transport	90	3	6	RO 5	The study of the main types and characteristics of energy resources, regulatory and legal support for energy conservation, improving the energy efficiency of the transportation process; energy-saving technologies in repair production and operation of transport infrastructure facilities; organization and methods of energy conservation management. They are used to solve problems, conduct thematic colloquiums, debates. Guest lectures are being held by leading experts of the transport and communication industry.	Fundamentals of Economics and Entrepreneurship	Final certification
	PD	SQ	PowerBI Business Analytics (Minor)	90	3	7	RO 6	Formation of students' skills and knowledge to collect, analyze and structure data in order to build interactive dashboards, program at the current level of development of the MDX multidimensional data analysis language, build models and algorithms of projects in relevant areas of BI technology, be able to analyze the essence of the subject field of the project and make decisions. Methods of active learning are used - brainstorming, working in small groups.	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
<b>Total</b>				<b>1830</b>	<b>61</b>					

## 10. EXPERT CONCLUSIONS

### ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ на образовательную программу «6В07324–Строительство автомобильных дорог и аэродромов»

Реализация образовательной программы «6В07324–Строительство автомобильных дорог и аэродромов» осуществляется посредством последовательности изучаемых дисциплин, с установлением конкретных задач и целевых индикаторов. Четко прослеживается междисциплинарное взаимодействие, которое заключается в комплексной связи между содержанием отдельных учебных дисциплин, посредством которых достигается внутреннее единство программы подготовки специалистов.

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. Актуально изучение вопросов экологической обстановки и обеспечение условий безопасной трудовой деятельности на предприятиях АО «КазДорНИИ»

Образовательные траектории разработаны в соответствии с запросами транспортно-коммуникационной отрасли (каждый отмечает по своей ОП).

Цель образовательной программы актуальна, сформулирована достаточно лаконично и объединяет в себе результаты обучения. В описании дисциплин отражены их цели и содержание, как индикатора достижения результатов обучения по данной образовательной программе. Также, в образовательной программе, разработанной на основе профессионального стандарта, отражены основные трудовые функции в компетенциях и результатах обучения, указаны виды связей с работодателями: проведение гостевых лекций, лекций ведущих топ менеджеров, наличие филиалов кафедр на базе организаций.

Таким образом, представленная на экспертизу образовательная программа «6В07324–Строительство автомобильных дорог и аэродромов» по направлению подготовки кадров «6В073-Архитектура и строительства», полностью соответствует требованиям ГОСО, имеет четкую последовательность при разработке, отвечает современным запросам рынка труда, профессиональным стандартам и может быть реализована для подготовки кадров по образовательной программе «6В07324–Строительство автомобильных дорог и аэродромов» по направлению.

Эксперт  
В.Н.С., к.т.н., АО «КазДорНИИ»



Айтбаев К.А.

**ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ**  
**на образовательную программу «6В07324–Строительство автомобильных**  
**дорог и аэродромов»**

Реализация образовательной программы «6В07324–Строительство автомобильных дорог и аэродромов» осуществляется посредством последовательности изучаемых дисциплин, с установлением конкретных задач и целевых индикаторов. Четко прослеживается междисциплинарное взаимодействие, которое заключается в комплексной связи между содержанием отдельных учебных дисциплин, посредством которых достигается внутреннее единство программы подготовки специалистов.

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. Актуально изучение вопросов экологической обстановки и обеспечение условий безопасной трудовой деятельности на предприятиях АО «КазДорНИИ»

Образовательные траектории разработаны в соответствии с запросами транспортно-коммуникационной отрасли (каждый отмечает по своей ОП).

Цель образовательной программы актуальна, сформулирована достаточно лаконично и объединяет в себе результаты обучения. В описании дисциплин отражены их цели и содержание, как индикатора достижения результатов обучения по данной образовательной программе. Также, в образовательной программе, разработанной на основе профессионального стандарта, отражены основные трудовые функции в компетенциях и результатах обучения, указаны виды связей с работодателями: проведение гостевых лекций, лекций ведущих топ менеджеров, наличие филиалов кафедр на базе организаций.

Таким образом, представленная на экспертизу образовательная программа «6В07324–Строительство автомобильных дорог и аэродромов» по направлению подготовки кадров «6В073-Архитектура и строительства», полностью соответствует требованиям ГОСО, имеет четкую последовательность при разработке, отвечает современным запросам рынка труда, профессиональным стандартам и может быть реализована для подготовки кадров по образовательной программе «6В07324–Строительство автомобильных дорог и аэродромов» по направлению

Эксперт  
в.п.с., к.т.н., АО «КазДорНИИ»

*Е.К.*



Е.К.



## 11. REVIEWER'S CONCLUSION

### Рецензия

на образовательную программу  
6B07130 – «Автомобильные дороги и аэродромы»

Образовательная программа (бакалавриат) «6B07130 – Автомобильные дороги и аэродромы» 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 Технология автомобильно-дорожного строительства; Эксплуатация автомобильных дорог; Модернизация автомобильных дорог.

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 компетентности модели выпускника.

Образовательная программа предусматривает профессионально-практическую подготовку обучающихся 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.

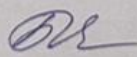
#### Заключение:

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 «6B07130 – Автомобильные дороги и аэродромы».

#### Рецензент

Зав.каф. «ТСиПСМ»  
КазаДИ им. Л.Б. Гончарова



 Бектурсунова Г.С.

«\_\_» \_\_\_\_ 2023г.

## 12. LETTERS OF RECOMMENDATION

Уважаемый (ая) Салтанат Нурадиловна

Руководство «АО КаздорНИИ» в лице Директора филиала АО «КаздорНИИ» Ерембаева У.М. ознакомилось с содержанием образовательной программы «6В07324-Строительство автомобильных дорог и аэродромов» и внесло следующие рекомендации:

- включить в содержание образовательной программы дисциплины: с автомобильными дорогами,

- увеличить количество часов, выделяемых на проведение части лабораторных и практических занятий на базах работодателей с целью формирования определенных видов профессиональных компетенций;

- актуализировать содержание образовательных программ путем включения в цикл базовых и профилирующих модулей дисциплины, отражающие современные инновационные технологии в транспортно-коммуникационной сфере. Предлагается включить следующие дисциплины Изыскание и проектирование автомобильных дорог; Технология строительства автомобильных дорог и аэродромов; Эксплуатация автомобильных дорог; Реконструкция автомобильных дорог;

- увеличить количество часов, выделяемых на проведение производственных практик;

включить дисциплины:

-изыскание и проектирование автомобильных дорог;

-технология строительства автомобильных дорог и аэродромов;

-эксплуатация автомобильных дорог;

-реконструкция автомобильных дорог;

Директор Алматинского филиала  
АО «КаздорНИИ»



Ерембаев У.М.

## 13. REVIEW AND APPROVAL PROTOCOLS

### 13. ПРОТОКОЛЫ РАССМОТРЕНИЯ И УТВЕРЖДЕНИЯ

Академия логистики и транспорта

#### ПРОТОКОЛ №6

#### Заседания

Академического комитета по образовательной программе и ведущих преподавателей кафедры «Строительная инженерия»

« 28 » 02 2023 года

г. Алматы

**Председатель:** Исмагулова С.О.

**Секретарь:** Жадраев Р.Ж.

**Присутствовали:** члены Академического комитета, Исмагулова С.О., Дюсенгалиева Т.М., Утешбаева А.А., Ибраимов А.К., Джексенбаев Е.К., Алимкулов М.М., Тулемисов Т.Ж., Бихожаева Г.С.

**Представители с производства:** АО КаздорНИИ, к.т.н., в.н.с. Айтбаев К.А., директор алматинского филиала АО КазДорНИИ Ерембаев У.М., РГП на ПВХ «Национальный центр качества дорожных активов» г.Алматы, инженер Айымбетов С.А., АО «КаздорНИИ», к.т.н., в.н.с. Айдаралиев Е.К..

**Обучающиеся:** Сисембай А.Р.

#### ПОВЕСТКА ДНЯ:

1. Рассмотрение компетентностной модели выпускника
2. Рассмотрение возможности включения дисциплин в КЭД и РУП

По первому вопросу

#### ВЫСТУПИЛ(а):

Зав. кафедрой Исмагулова С.О. предложила рассмотреть компетентностную модель выпускника по 3 уровням образования: бакалавриат, магистратура, докторантура. Компетентностная модель выпускника включает в себя следующие части:

- Цель и задачи образовательной программы;
- Результаты обучения;
- Область, объекты, виды и функции профессиональной деятельности;
- Перечень должностей по образовательной программе;
- Профессиональные сертификаты, полученные по окончании обучения;
- Требования к предшествующему уровню образования.

#### ВЫСТУПИЛ:

Представитель работодателей: Айтбаев К.А., который предложил в силу специфики их организации отразить в объектах профессиональной деятельности следующее: Современные инновационные технологии в транспортно-коммуникационной сфере

#### ВЫСТУПИЛ:

Член кафедры Ибраимов А.К., который предложил утвердить После рассмотрения компетентностной модели выпускника было предложено утвердить данную Модель по 3 уровням образования.

#### ПОСТАНОВИЛИ:

- предоставить компетентностную модель выпускника по 3 уровням образования: бакалавриат, магистратура, докторантура для рассмотрения и утверждения на Совете института «Транспортная инженерия».

По второму вопросу

**ВЫСТУПИЛ(а):** зав кафедрой Исмагулова С.О. с предложением заслушать представителей работодателей и обучающихся по включению новых дисциплин в КЭД и РУП приема 2023г.

**ВЫСТУПИЛ:** представитель работодателей РГП на ПВХ «Национальный центр качества дорожных активов» г.Алматы, инженер Айымбетов С.А.

Организации заинтересованы в специалистах, имеющих хороший уровень подготовки и знаний в области проектирования и строительство автомобильных дорог. Вносим предложения о внесении в РУП следующих востребованных дисциплин Изыскание и проектирование автомобильных дорог; Технология строительства автомобильных дорог; Эксплуатация автомобильных дорог. Реконструкция автомобильных дорог.

**ВЫСТУПИЛ:** обучающийся Сисембай А.Р.

Считаем необходимым включить в РУП следующих дисциплин Изыскание и проектирование автомобильных дорог; Технология строительства автомобильных дорог; Эксплуатация автомобильных дорог. Реконструкция автомобильных дорог.

**ПОСТАНОВИЛИ:**

1. Информацию принять к сведению;
2. Учесть предложения и рекомендации работодателей и обучающихся;
3. Рассмотреть включение в РУП следующих дисциплин: Изыскание и проектирование автомобильных дорог; Технология строительства автомобильных дорог; Эксплуатация автомобильных дорог, Реконструкция автомобильных дорог.

Председатель:

Секретарь:



Исмагулова С.О.

Жадраев Р.Ж.

Академия логистики и транспорта

Выписка из протокола №7

**Заседания КОК УМБ института «Транспортная инженерия»**

г. Алматы

« 15 » марта 2023 года

**Председатель: Чигамбаев Т.О.**

**Секретарь: Утепова А.**

**Присутствовали:** члены КОК УМБ, члены Академического комитета

**Представители с производства:** АО КазДорНИИ, к.т.н., в.н.с. Айтбаев К.А., директор алматинского филиала АО КазДорНИИ Ерембаев У.М., РГП на ПВХ «Национальный центр качества дорожных активов» г.Алматы, инженер Айымбетов С.А., АО «КазДорНИИ», к.т.н., в.н.с. Айдаралиев Е.К..

**Обучающиеся:** Сисембай А.Р.

**ПОВЕСТКА ДНЯ:**

1. Рассмотрение Каталога элективных дисциплин (КЭД), Рабочей учебной программы (РУП), паспорта образовательных программ бакалавриата, магистратуры и докторантуры.

**ВЫСТУПИЛ(а):** зав. кафедрой Исмагулова С.О. представила на рассмотрение КЭД, РУП бакалавриата, магистратуры и докторантуры.

На кафедре «Строительная инженерия» было проведено заседание с привлечением представителей работодателей и обучающихся по обсуждению структуры и содержанию образовательной программы 6В07324-Строительство автомобильных дорог и аэродромов

Представителями работодателей и обучающимися были предложены ряд новых актуальных дисциплин, которые кафедра одобрила и включила в новые КЭД и РУП.

**ПОСТАНОВИЛИ:**

1. Информацию принять к сведению;
2. Учесть все предложения и рекомендации работодателей, представителей студенческого актива;
3. Представить КЭД, РУП и ОП бакалавриата, магистратуры и докторантуры для рассмотрения и утверждения на Совете института, УС Академии.

**Председатель КОК УМБ**

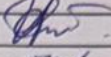
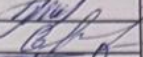
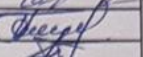
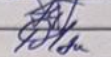
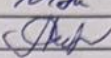
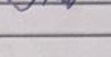
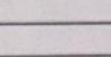
**Секретарь**

**Чигамбаев Т.О.**

**Утепова А.У.**

## 14. APPROVAL SHEET

### 14. ЛИСТ СОГЛАСОВАНИЯ

№	Ф.И.О.	Место работы/учебы	Должность	Дата согласования	Подпись
1	Мельничук С.В.	АЛТ	зав. кафе. СВ	30.03.23	
2	Шиндуров С.Г.	АЛТ	зав. кафе	30.03.23	
3	Сосновский А.И.	П.И.С.	зав. кафе	30.03.23	
4	Федорова Л.В.	АЛТ	зав. кафе	30.03.23	
5	Павловский А.В.	ОЦ	зав. кафе	30.03.23	
6	Колесов Д.Т.	АЛТ	зав. кафе	30.03.23	
7	Бурова А.Р.	АЛТ	зав. кафе	30.03.23	

## 15. CHANGES REGISTRATION SHEET

№	Section, paragraph of the document	Type of change (replace, cancel, add)	Number and date of notification	Change made	
				Date	Surname and initials, signature, position