Joint Stock Company Academy of Logistics and Transport



APPROVE **US ALT** decision dated 2023 (Protocol №/3) **President-Rector** A DOMMODIN Amirgalieva S.N. стики

## EDUCATIONAL PROGRAM

NAME: 6B07130 - HIGHWAYS AND AIRFIELDS

LEVEL OF TRAINING: BACHELOR'S DEGREE

CODE AND CLASSIFICATION OF AREAS OF STUDY: 6B071 – ENGINEERING AND ENGINEERING

CODE AND GROUP OF EDUCATIONAL PROGRAMS: -TRANSPORT FACILITIES

DATE OF REGISTRATION IN THE REGISTER: <u>14.06.2021</u> REGISTRATION NUMBER:<u>6B07100355</u>

Almaty, 2023

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## 1. БАҒДАРЛАМАНЫ ҚАРАСТЫРУ, КЕЛІСУ ЖӘНЕ БЕКІТУ, ҚҰРАСТЫРУШЫЛАР МЕН САРАПШЫЛАР ТУРАЛЫ МӘЛІМЕТТЕР

#### 1 ЖАСАЛДЫ:

<u>Ассистент профессор</u> (лауазымы)

<u>ЖШС «Саулет – SKB» директоры</u> (лауазымы) <u>ЛКА қауымдастық профессоры</u> (лауазымы)

<u>Ассистент профессор</u> (лауазымы)

<u>Студент АДА-22-1 тобы</u> (лауазымы)

## 2 ЭКСПЕРТТЕР:

<u>«ҚазжолҒЗИ» АҚ ж.ғ.қ. т.ғ.к.</u> (лауазымы)

<u>«ҚазжолҒЗИ» АҚ ж.ғ.қ. т.ғ.к.</u> (лауазымы)

#### 3 РЕЦЕНЗЕНТ:

<u>«КҚжҚМӨ» каф.меңгерушісі</u> (лауазымы)

4 ҚАРАСТЫРЫЛДЫ ЖӘНЕ ҰСЫНЫЛДЫ:

АК кафедра (кафедра) «ҚИ» Хаттама №6 «<u>15</u>»<u>03</u>2023ж

КОК-ОӘБ «КҚ» отырысы Хаттама №7 «<u>15</u>»<u>03</u>2023ж

ОӘБотырысы Хаттама № <u>№ 29</u>»<u>07</u>2023ж

**5 БЕКІТІЛДІ Ғылыми кеңес** шешімімен «<u>30</u>» <u>03</u> 2023ж. № <u>13</u> **6 ЖАҢАРТЫЛДЫ** 12.05.2023



## 2. REGULATORY REFERENCES

The educational program has been developed on the basis of the following regulatory 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 January 08, 2021).

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 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 organization of the educational process on credit technology of education in organizations of higher and (or) postgraduate education, approved by the Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan 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 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 development educational programs of higher and postgraduate education".

10. RI-ALT-33 "Regulations on the order of the

## 3. PASSPORT OF THE EDUCATIONAL PROGRAM

N₂	Field name	Note
1	Registration number	6B07100355
2	Code and classification of the field of	6B07 Engineering, Manufacturing and Civil
Δ	education	engineering
3	Code and classification of training areas	6B071 Engineering and engineering trades
4	Code and group of the educational program (OP)	B166 Transport facilities
5	Name of the educational program (OP)	6B07130 Highways and airfields
6	Type of educational program (OP)	New EP
7	The purpose of the educational program (OP)	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.
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
	Distinctive features of the educational program (OP)	No
11	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 "6B07130 – Highways and airfields"
16	Availability of an appendix to the license for the direction of training	KZ12LAA00025205 (005)
	Availability of educational program accreditation (OP)	Available
17	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 - Demonstrate knowledge of mathematical and physical methods, measurement of electrical quantities during the operation of transport infrastructure facilities.

LR2 - Apply the basic laws and theorems to create a physical and mathematical model of the process under study and methods in calculating the strength, stability and durability of transport structures.

LR3 - To choose methods of calculation and technology of construction of load-bearing structures in the construction of artificial structures in complex engineering-geological and hydrological conditions using modern materials.

LR4 – To organize a geodetic survey of the route using the basics of geoinformatics, design of transport structures, computer modeling, information and communication technologies with the consolidation of theoretical knowledge during practice and further use in the design of transport infrastructure facilities.

LR5 - To use knowledge of the legislation of the Republic of Kazakhstan and international regulatory documents on labor protection and environmental safety of life and the environment, in the field of modern resource-saving technologies for primary and secondary use of building materials.

LR6 – Calculate technical parameters for economic analysis using modern models and patterns, principles and methods of managing time resources for programming, building models at the modern level in relevant areas of BI technology.

LR7 - Plan the organization of construction of facilities and the production process, taking into account the technological sequence of work performed using new technologies, materials and road construction machines.

LR8 - Classify methods of monitoring, diagnostics and condition assessment according to the requirements for highways during operation and management organization in production conditions, forming practical skills and professional competencies.

LR9 – To develop plans for survey and design work, principles of tracing roads and building logistics systems for scientific activities using language skills, constitutional rights of the state authorities of the Republic of Kazakhstan.

LR10 – To justify the choice of control methods for ensuring production, process control, survey, design, construction and operation of highways and airfields, taking into account their restructuring and reconstruction.

LR11 – To predict the quality of work performed on the repair and maintenance of highways and airfields, taking into account the analysis of current problems of modern society, worldview and evaluation of defects for effective decision-making.

**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:**

# **1.** Preparation of initial data for the development of a work production project (PPR), including using the Project Information Model (PIM) (if necessary) (when using TIMSO in the organization):

- preparation of work descriptions, specifications, tables and other technical documentation for the development of linear and network schedules of work;

- development of technological and labor process maps;

- preparation of information for operational meetings on the progress of construction;

- preparation of statements and other technological documentation;

- calculation of operational norms of consumption of materials, tools, fuel and electricity, labor costs;

- preparation of applications for technological equipment. Tools, devices for construction production Implementation of optimal production modes.

## 2. Making suggestions for improving the quality of work.

3. Drawing up plans for the placement of equipment, technical equipment and organization of workplaces.

## 4. Calculation of production capacity and equipment loading.

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, 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 educati

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

N⁰	Name of the discipline	nber of edits	Mati acco disci	rix of rding iplines	corre to the	lation e educ	of le cation	arnin; al pro	g outo ogram	comes a with	s 1 acad	emic	
		Nur cı	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	909	PO1	P01 1
1	7	3	4	5	9	7	8	6	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	2											+
7	Cultural studies	2											+
8	Political Science	2											+
9	Psychology	2											+
10	Physical Culture	8											+
11	Ecology and life safety	5					+						
12	Methods of scientific research	5 +											
13	Fundamentals of Economics and Entrepreneurship	5						+					

14	Fundamentals of law and anti-	5								+	
15	Engineering Methometics	0									
13	Applied Druging	9	+								
20	Eurodemontale of computer modeling	9	+								
20	Fundamentals of computer modeling	0				+					
21	Building materials	6			+						
22	Geology, soil mechanics, foundations and foundations	6			+						
23	Building structures	6			+						
24	Electrical engineering and the basics of electronics	6	+								
25	Labor protection	6					+				
26	Educational practice (geodetic)	2							+		
27	Theoretical mechanics	6		+							
28	Engineering Mechanics 1	6		+							
29	Resistance of materials	6		+							
30	Engineering Mechanics 2	6		+							
31	Construction mechanics	6		+							
32	Engineering Mechanics 3	6		+							
33	Engineering geodesy	6				+					
34	Fundamentals of geoinformatics	6				+					
35	Fundamentals of design of transport facilities	6				+					
36	Introduction to the design of transport infrastructure facilities	6				+					
37	Road construction machinery and equipment	6					+	+			
38	Mechanization of the automobile and road economy	6					+	+			
39	Artificial structures on highways	9			+						
40	Construction of highways	9					+			+	

41	Arrangement of airfields	6										+	
42	Surveys and design of highways	9						+			+		
43	Operation of highways	9								+		+	
44	Maintenance and repair of highways	9								+			
45	Technology of automobile and road	6			+				+				
	construction												
46	Technology of construction of	6			+				+				
	highways and airfields												
47	Organization of construction of	6					+		+				
	transport infrastructure facilities												
48	Organization and planning of	6					+		+				
	construction of transport facilities												
49	Modernization of highways	6								+		+	
50	Reconstruction of highways	6					+					+	
51	Managerial economics	3						+					+
52	Transport logistics	3									+	+	
53	Resource saving in transport	3					+					+	
54	Time management	3						+					+
55	Digital diagnostics of construction	3				+				+			
	objects												
56	Power BI Business Analytics	3				+		+					
57	Production practice 1	3								+			
58	Production practice 2	4								+			
59	FINAL CERTIFICATION:	8	+	+	+	+	+	+	+	+	+	+	+

6. STRUCTURE OF THE BACHELOR'S DE	GREE PROGRAM
Name of avalag of dissiplines	Total labor intensity

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

## 7. CURRICULUM FOR THE ENTIRE PERIOD OF STUDY

#### JSC "Academy of Logistics and Transport"

ADMATH

ПСАРРВОЛЕНИ Колік академиясы

Chairman of the Academic Council

By the decision of the ALT Academic Council from Academic 2023 8, Protocol no.

S. N. Amirgalieva

#### CURRICULUM

Form of study: full-time

Duration of training: 4 years

Training area: 6B071-Engineering and Engineering

Group of educational programs: B166-Transport facilities

#### Name of the educational program: 6B07130-Highways and airfields

Degree: Bachelor of Engineering and Technology

Admission: 2023

			To	otal bor	For	m of	A	lmou	nt of t	rainir	ng loi	ad,		/	Dis	tribut	ion by	seme	ester			
			inte	nsity	sem	ester		c	ontac	t hou	rs		1st c	ourse	2	nd	3rd	year		4th ye	ar	
Ng	Disciple	Name of cycles and	<u>u</u>	<u>v</u>			y0	CI	assro	om	s	RO	1 sem	2 sem	3 sem	4	5 sem	6 sem	7 sem	8 sem	9 sem.	Assignm ent to the
	code	disciplines	in academ hours	in academ credits	Exam	KP (KR)	Total hour	lectures	practical features	laboratory data	SROP	SRO	15 weeks	7 weeks	8 weeks	departne nt						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	and the state of the	Ser.	1.15	CYC	LEO	FGEN	VERA	LEDU	CAT	ON S	UBJE	CTS (	OED):		~ ~ /					-	and the second
1.1.	Required o	component:	1530	51	13	-	1530	120	358	15	120	917	21	16	7	7	0	0	0	0	0	
1.1.1.	23-0-8-OK-IK	History of Kazakhstan	150	5	3	-	150	30	15	-	8	97	-		5	-	-	-		-	-	SRSIFV
1.1.2.	23-0-B-OK-Fil	Philosophy	150	5	4	-	150	30	15		8	97				5	_		-	-	-	SRSIFV
1.1.3.	23-0-B-OK-IYa	Foreign language	300	10	1,2	-	300		90		16	194	5	5								YAP
1.1.4.	23-0-B-OK- K(R)Ya	Kazakh (Russian) language	300	10	1.2		300		90		16	194	5	5								YAP
1.1.6.	23-0-8-0K- IKT	Information and communication technologies	150	5	1		150	30		15	8	97	5									ICTS
		Socio-political knowledge	-																			
	23-0-B-OK-	Sociology	-		-	-		7	15	-	8	30				-		-	-	-	-	SRSIEV
1.1.6.	23-0-B-OK-	Cultural Studies						1	15	-		20		4								epeiev
	Kul	Deliviced Calence	240	8	1,2		240	0	15		0	29	-				-	-	-	-	-	SPCSIFY
	23-0-0-014-0	Political Science						<u></u>	15	-	0	30	4									SKSIFV
	23-0-B-OK-Psi	Psychology		-	12	-		8	15	-	8	29			-	-		-	-	-	-	SRSIFV
1.1.7.	23-0-B-OK-FK	Physical Culture	240	8	3,4		240		88		32	120	2	2	2	2						SRSiFV
1.2.	Componen	Module of a component for	150	5	1	0	150	30	15	0	8	97	0	0	5	0	0	0	0	0	0	
-	23-0-B-KV-	Ecology and life safety																				ATSIBZHD
	23-0-B-KV- MNI	Methods of scientific																				SRSIFV
1.2.1.	23-0-B-KV- OEIP	Fundamentals of economics and entrepreneurship	150	5	3		150	30	15		8	97			5							LMT
	23-0-8-KV- OPAK	Fundamentals of law and anti- corruption culture																				SRSiFV
-	TOTAL for	the OOD cycle:	1680	56	14	0	1680	150	373	15	128	1014	21	16	12	7	0	0	0	0	0	
2.	University	component:	1680	56	9		1680	270	195	75	64	1016	9	15	6	2	6	12	6		0	and the second
2.1.1.	23-0-B-VK-IM	Engineering Mathematics	270	9	2		270	45	45		8	172	-	9	-	-		14		-	-	0
2.1.2	23-0-B-VK-PF	Applied Physics	270	9	1		270	45	30	15	8	172	9						-	-	-	01
2.1.3.	23-0-B-VK-	Fundamentals of computer	180	6	2		180	30	30		8	112		6				-	-	-	-	ICTs
2.1.4	23-0-B-VK-	Building materials	180	6	3		180	30	15	15	8	112			6		-	-	-	-	-	
2.1.5.	23-0-8-VK-	Geology, soil mechanics,	180	6	5		180	30	15	15	8	112			-		6				-	si
2.1.6.	23-0-8-VK-SK	Building structures	180	6	6		180	30	30		8	112	-		-	-	-	6	-	-	-	5j
2.1.7.	23-0-B-VK-	Electrical engineering and	180	6	6		180	30	15	15	8	112						6	-		-	E
2.1.8.	23-0-B-VK-OT	Labor protection	180	6	7		180	30	15	15	8	112	-				-		6	-	-	ATSIBZHD
2.1.9.	23-0-B-VK-	Training practice (geodesic)	60	2	4		60									2			-	-	-	
2.2.	Component	of your choice:	1080	36	6		1080	150	150	60	48	672	0	0	12	12	12	0	0	0	0	-
2.2.1.	23-0-B-VK/KV- TMeh	Theoretical mechanics	180	6	3		180	30	30		8	112			6							si
	23-0-B-KV- IMah1	Engineering mechanics 1																				
2.2.2	SMat 23-0-8-KV-	Material resistance Engineering mechanics 2	180	6	4		180	15	30	15	8	112				6						si
2.2.3.	23-0-8-KV- SMeh 23-0-8-KV-	Construction mechanics	180	6	5		180	30	30		8	112					6					51
	Meh3	Engineering mechanics 3																		1		

/	23-0-8-KV-	Engineering geodesy				_	1	1	-	-	-		<u> </u>	-	_	-	-	-	-	-	_	
224	23-0-8-KV-	Fundamentals of	180	6	3		180	30	15	15	8	112			6							si
	23-0-B-KV- OPTS	Basics of designing transport structures				-			-	-	-		-		-	-	-	-		-	-	
2.2.5	23-0-8-KV- VPOTIa	Introduction to the design of transport infrastructure facilities	180	6	4		180	15	15	30	8	112				6						si
	23-24/30-B-KV DSMO	Road construction machinery and equipment				-			-	-	-	-			-	-	-		-	-	-	
2.2.6.	23-24/30-8-KV MADH	Mechanization of automobile and road facilities	180	6	5		180	30	30		8	112					6					ATSIBZH
1000.00	TOTAL by	DB cycle:	2760	92	15	0	2760	420	245	125	447	4000	0	40	40		10	10	0	0	0	
3.	1.4.549			121	10	Cì	CLE (	DF PF	ROFILI	E DIS	CIPI	INES	PD	10	10	14	1 10	14	0	0	0	
3.1.	University	component:	1740	58	8		1740	255	255	0	48	972	0	0	0	9	9	9	18	9	4	
3.1.1.	23-30-B-VK- ISAD	Artificial structures on highways	270	9	4		270	45	45		8	172				9		-	10		-	si
3.1.2	UAD	Road construction	270	9	5		270	45	45		8	172					9					31
3.1.3.	23-30-B-VK- UA	Setting up airfields	180	6	6		180	30	30		8	112						6				si
3.1.4.	23-30-8-VK-	Road surveys and design	270	9	7		270	45	45		8	172	-	-			-		9			ai
3.1.5.	23-30-8-VK-	Operation of highways	270	9	7		270	45	45	-	8	172							9		-	el
3.1.6.	23-30-8-VK-	Maintenance and repair of	270	9	8	1	270	45	45		8	172	-	-					-		-	
3.1.7.	23-0-8-VK-	Production practice 1	90	3	6	1	90			-	-		-	-		-	-		-	-	-	-
3.1.8.	23-0-8-VK-	Production practice 2	120	4	9	-	120	-	-		-	-	-	-		-	-	-	-	-		
3.2.	Componer	t of your choice:	810	27	C	0	240	125	475	0	10	100	-	-	-	-		-	-	-	-	-
	23-30-8-KV-	Technology of automobile	010	61	0	0	810	135	135	0	48	492	0	0	0	0	3	9	9	6	0	
3.2.1.	TADS 23-30-B-KV- TSADA	and road construction Technology of construction of highways and airfields	180	6	6		180	30	30		8	112						6				
3.2.2	23-0-8-KV- OSOTIs 23-0-8-KV- OPSTS	Organization of construction of transport infrastructure facilities Organization and planning of construction of transport structures	180	6	7		180	30	30		8	112							6			si
3.2.3.	23-30-8-KV- Mad	Road modernization	180	6	8		180	30	30		8	112				-				6		si
_	RAD	Road reconstruction																				
		1			M	nor p	progra	m 1 "	Resou	urce I	Mana	gemei	nt"									
3.2.4.	23-0-B-UE	Managerial economics	90	3	5		90	15	15		8	52					3					LMT
3.2.5.	23-0-8-TL	Transport logistics	90	3	6		90	15	15		8	52	-					3	-	-	-	LMT
3.2.6.	23-0-B-RT	Resource saving in transport	90	3	7		90	15	15		8	52							3			ps
_					N	linor	progr	am 2	"Digit	al co	mpet	encies	5"					-		-		
3.2.4.	23-0-B-TM	Time management	90	3	5	-	90	15	15		8	52			-		3					LMT
3.2.5.	23-0-B-TeDOS	construction sites	90	3	6		90	15	15		8	52						3				si
3.2.6.	23-0-8-8APBI	Intelligence	90	3	7		90	15	15		8	52							3			ICTS
10000	TOTAL for	the PD cycle:	2550	85	14	0	2550	390	390	0	96	1464	0	0	0	9	12	18	27	15	4	
	COURSE O	F STUDY (MSW):	6990	233	43	0	6990	960	1108	150	336	4166	30	31	30	30	30	30	33	15	4	
4.	23-0-B-VK-IA	FINAL CERTIFICATION	240	8								1									8	si
	TOTAL FOR	R THE ENTIRE TRAINING	7230	241					33				30	31	30	30	30	30	33	15	12	
5,		STREAM STREAM		1910	0.0	AD	DITIO	NAL T	YPES	OF	RAIN	ING	DVE	-	-	-	-	-	-	-	1	-
5.1.	23-0-B-DVO-V	Volunteering	30	1	1		30		10		8	12	1		1			1	T	T	1	
5.2	23-0-B-DVO-	Financial literacy	90	3	3	-	90	15	15	-	8	52	-	-	1	-	-	-	-	-	-	
	FG				, °		1	1.5	10			02			1							LMY

AGREED:

Vice-Rector for AD DAPC Director

Zharmagambetova M. S. Lipskaya M. A.

DEVELOPED BY:

Director of the TI Institute

Head of the Department "SI"

\_\_\_ Chigambaev T. O. Ismagulova S. O.

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## 8. CATALOG OF DISCIPLINES OF THE UNIVERSITY COMPONENT

## EDUCATIONAL PROGRAM

## 6B07130 – Highways and airfields

**Duration of study: 4 years** 

## **Education level: Bachelor's degree**

Admission year: 2023

				Total labo	or intensity					
Module	Cycle	Component	Name of the discipline	in academic hours	in academic credits	Term	Learning outcomes	A brief description of the dissplina	Prerequisites	Post-requirements
1	2	3	4	5	6	7	8	9	10	11
	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	Applied Physics
Module 2 - Natural science competencies	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	Applied Physics

1	2	2	4	5	6	7	0		10	11
1 Module 6 – Core	DB	3 VK	4 Fundamentals of computer modeling	5 180	6	2	8 RO 4	9 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	10 Basic school knowledge in physics and chemistry	11 Fundamentals of transport ecology, Labor protection
competencies	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.	Ecology and life safety. Labor protection	Organization of construction of transport infrastructure facilities, Modernization of highways
Module 6 – Core	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, Transport structures, Technical mechanics, Resistance of materials
competencies	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, Artificial structures on highways,, Construction of airfields, Construction of

								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.		highways
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	Arrangement of highways, Organization of construction of transport infrastructure facilities, Survey and design of highways, Modernization of 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, Transport structures, Geology and mechanics of soils, foundations and foundations. Artificial structures on highways,
	DB	VK	Educational practice (geodetic)	60	2	4	RO8		Engineering Mathematics , Applied Physics	Survey and design of highways

Module 6 – Core	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.	Fundamentals of computer modeling, Resistance of materials, Theoretical mechanics, Building structures, Geology and mechanics of soils, foundations and foundations.	Survey and design of highways, Organization of construction of transport infrastructure facilities
competencies	PD	VK	Construction of highways	270	9	5	RO 5	Familiarization with the technology of construction of highways and airfields, methods of control to ensure production, management of technological processes that meet the requirements of standards and regulatory documents, development of technical documentation on compliance with technologies during the construction and operation of transport facilities. Within the framework of the discipline, interactive teaching methods, computational and analytical method are used.	Artificial structures on highways,	Survey and design of highways, Organization of construction of transport infrastructure facilities
Module 6 – Core competencies	PD	VK	Arrangement of airfields	180	6	6	RO 10	To familiarize with the basic conditions for the survey, design, construction and operation of runways and taxiways of airfields, paying attention to the arrangement of unique ground structures that carry out airport activities for airfield support of civil aircraft flights on domestic and international air lines in modern conditions, and to instill practical skills in performing calculations when solving transport problems. Interactive teaching methods, computational and analytical method are used.	Artificial structures on highways,, Construction of highways	Technology of automobile and road construction, Technology of construction of highways and airfields, Organization of construction of transport infrastructure facilities
	PD	VK	Surveys and design	270	9	7	RO 6, RO 9	Studies the methods of designing and	Artificial	Technology of

									,,	
			of highways					surveying highways, road drainage and roadbed, taking into account the national economic significance of these structures, the rules for justifying the norms of designing highways, the principles of tracing roads, the selection of drainage holes of artificial structures, the classification of relief by the complexity of tracing, sources of moistening of the roadbed, the requirements of efficiency and safety of road transportation using computer technology (Excel, AutoCAD, IndorCad Road). Guest lectures by specialists are provided.	structures on highways,, Arrangement of highways, Arrangement of airfields	automobile and road construction, Technology of construction of highways and airfields, Organization of construction of transport infrastructure facilities
Module 6 – Core	PD	VK	Operation of highways	270	9	7	RO 8, RO 10	Studies the theoretical foundations of the maintenance, repair and management of the functioning of roads by the road maintenance service. Much attention is paid to the methods of monitoring, diagnosis and assessment of the condition, requirements for highways in different periods of the year in different climatic conditions. Interactive teaching methods, computational and analytical method are used.	Ecology and life safety, Fundamentals of computer modeling,	Ecology and life safety, Fundamentals of computer modeling,
competencies	PD	VK	Maintenance and repair of highways	150	5	8	RO 8	To familiarize with the classification of the main types of road repair and maintenance works, the timely and complete implementation of which is necessary to maintain and maintain the transport and operational condition of the road during the entire service life at a level that ensures the requirements for the consumer properties of the road established for this category. Methods of active learning – performing individual computational and graphical tasks.	Survey and design of highways	Modernization of highways, Road construction machinery and equipment, Organization of construction of transport infrastructure facilities
	PD	VK	Production practice	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	Survey and design of highways, Artificial structures on highways	Pregraduate practice, Final certification

PD Module 6 - Core competenciesVKProduction practice 212049RO8The purpose of pre-graduate practice for bachelors is to ensure the relationship between the theoretical howledge gained during the assimilation of the chosen educational program and practical activities. The construction of airfields, The students in the learning process, to theoretical highways, the construction of airfields, The students in the learning process, to relationship between the theoretical highways, the construction of airfields, The students in the learning process, to to gain experimence in independent work.Artificial students in the learning process, to airfields, The are to consolidate and deependent students in the learning process, to to gain experimence in independent work.Artificial students in the learning process, to study best practices at the enterprise, as well as to gain experimence in independent work.Cycle of general education									and competencies in the process of mastering the bachelor's program. Industrial practice for students is an important component of the educational process, which allows them to navigate the labor market and find themselves in their future profession.		
Final certification       240       8       9       RO1-RO 12       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.       Cycle of general education disciplines       -         Provide       Provide	Module 6 – Core competencies	PD	VK	Production practice 2	120	4	9	RO8	The purpose of pre-graduate 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 the pre-graduate 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 work.	Artificial structures on highways,, The construction of highways, the construction of airfields, The survey and design of highways; Technology of automobile and road construction	Final certification
				Final certification	240	8	9	RO1-RO 12	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.	Cycle of general education disciplines (OOD), Cycle of basic disciplines (DB), Cycle of profile disciplines (PD).	-

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

## EDUCATIONAL PROGRAM 6B07130 - Highways and airfields

**Education level:** 

bachelor course

Duration of study: 4 years

Madula	Cycle	Component	Nome of the	Total labo	or intensity	Term	Results	Brief description of the discipline	Prerequisites	Post-requirements
Module			discipline	in academic hours	in academic credits		study			
1	2	3	4	5	6	7	8	9	10	11
Module 1 – General	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
educational competencies	ODD	SQ	Scientific research methods	150	5	3	R010	Obtaining theoretical and applied knowledge by students on the methods of scientific research of problems in the field of study, training of specialists with the skills of cognitive activity in the field of science, the formation of 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
Module 1 – General education competencies	ODD	SQ	Basics of economics and entrepreneurship	150	5	3	RO 6	He studies the activities of enterprises in various types of markets, the model of equilibrium and functioning of the market, state regulation of prices and tariffs. Considers the concept of entrepreneurship and the limits of its legal regulation, the conditions for the development of entrepreneurship, organizational and legal forms of doing business, business planning, entrepreneurial secrecy, social responsibility of. Active learning methods: case methods; business role- plaving 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 culture	150	5	3	RO 10	Improving the public and individual legal awareness and legal culture of students, as well as the formation of a system of knowledge and civil position to combat corruption as an anti-social 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 the legitimate interests of a person in case of their violation.	History of Kazakhs Kazakh (Russ foreign) langu Professional for language, Sociol Cultural Stud Political Scie Psychology	stan, sian, age, eign ogy, lies, nce,
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, App Physics	Engineering mechanics 2,3, Geology and mechanics of soils, foundations and 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	Engineering Mathematics, App Physics	Engineering mechanics 2,3, Geology and mechanics of soils, foundations and foundations, Artificial structures on highways,

								individual calculation and graphic works.		
Module 6 - Core	DB	SQ	Resistance of materials	180	6	4	RO 2	Formation of a complex of knowledge 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	Geology and mechanics of soils, foundations and foundations, Artificial structures on highways
competencies	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	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
competencies	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	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2	Geology and mechanics of soils, foundations and foundations, Artificial structures on highways,, Construction of highways

								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.		
Module 6 - Core	DB	SQ	Engineering geodesy	180	6	3	RO 4	Studies the composition and technology 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.	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2,3	Artificial structures on highways,, Construction of highways, Technology of automobile and road construction
competencies	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 Mathematics, Applied Physics, Engineering Mechanics 1,2,3	Artificial structures on highways, Construction of highways, Technology of automobile and road construction
Module 6 - Core	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 Mathematics, Applied Physics, Fundamentals of Computer Modeling, Building Structures	Foundations and foundations, Geotechnics in foundation engineering,Aerodromes, Highways
competencies	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	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2,3	Artificial structures on highways, Construction of highways, Technology of automobile and road construction

								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, computer modeling and practical analysis of the results.		
Module 6 - Core	DB	SQ	Road construction machinery and equipment	180	6	5	RO 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
competencies	DB	SQ	Mechanization of the automobile and road economy	180	6	5	RO 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
	DB	SQ	Technology of automobile and road construction	180	6	6	RO 3, RO 7	To develop a "Technological scheme for the supply of materials of products" with the definition of service areas of factories, quarries, the technological sequence of processes with the calculation of the volume of work and required resources, the scheme of work of road construction flows, calculate the need for vehicles for the transportation of construction materials, the production standards of construction machines using ENiR. Methods of active training – to perform	Road-building machinery and equipment, Construction materials, Construction of highways, Construction of airfields	Organization of construction of transport infrastructure facilities, Operation of highways, Modernization of highways

								calculations of the roadbed with the construction of center drawings.		
Module 6 - Core competencies	DB	SQ	Technology of construction of highways and airfields	180	6	6	RO 3, RO 7	Studies the main provisions on the organization of the production process construction of highways and airfields, the order of material and technical support of construction objects, technical rules for the performance of preparatory work, the construction of the roadbed in various conditions, the performance of finishing and strengthening works, the construction of structural layers of road and airfield clothing from various materials. Interactive teaching methods, computational and analytical method are used.	Road-building machinery and equipment, Construction materials, Construction of highways, Construction of airfields	Organization of construction of transport infrastructure facilities, Operation of highways, Modernization of highways
Module 6 - Core	DB	SQ	Organization of construction of transport infrastructure facilities	180	6	7	RO 5, 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 labor of a working unit or team, in compliance with the requirements of safety and environmental protection, the fundamental principles of planning, industrialism, integrated mechanization and automation of production, construction flow , all seasonality of work production.	Road-building machinery and equipment, Construction materials, Construction of highways, Construction of airfields	Modernization of highways
competencies	DB	SQ	Organization and planning of the construction of transport facilities	180	6	7	RO 5, RO 7	Studying the use of advanced technologies and the organization of construction and installation works, ensuring the reduction of labor, material and energy costs in compliance with the requirements of state standards, the sequence of preparatory, main and final work on the construction of transport facilities and the commissioning of facilities, the need for materials, equipment, working strength and deadlines. Within the framework of the discipline, the calculation and analytical method is used	Road-building machinery and equipment, Construction materials, Construction of highways, Construction of airfields	Modernization of highways

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Module 6 - Core competencies	PD	SQ	Modernization of highways	180	6	8	RO 8, RO 10	Formation of knowledge in the field of reconstruction of highways in terms of technology and organization of work, taking into account the basic principles: compatibility, compatibility, regeneration and improvement of the technical category of the reconstructed highway and evaluation of possible options for the technology of work depending on the condition of individual elements of the existing road. Interactive teaching methods, computational and analytical method are used.	Technology of automobile and road construction, Organization of construction of transport infrastructure facilities	Final certification
	PD	SQ	Reconstruction of highways	180	6	8	RO 5, 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 communications with the reconstruction of highways. Interactive teaching methods, computational and analytical method are used.	Road construction machinery and equipment, Construction materials, Technology of automobile and road construction, Organization of construction of transport infrastructure facilities	Final certification
	PD	SQ	Managerial Economics (Minor)	90	3	5	RO 6, RO 11	Formation of the conceptual apparatus and development of economic analysis skills using modern models and laws of economic science, consideration of economic problems and tasks facing the head of the company. The study of this discipline will allow students to gain and develop knowledge in the field of analytical research of economic, technological and technical parameters of an enterprise, and will also allow them to master the skills of applying special methods of economic justification of management decisions and assessing their consequences. Active learning methods 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, RO 10	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	Fundamentals of Economics and Entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification

								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		
	PD	SQ	Resource saving in transport (Minor)	90	3	7	RO 5, RO 10	transport and logistics companies. 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, Fundamentals of law and anti-corruption culture	Final certification
	PD	SQ	Time - management (Minor)	90	3	5	RO 6, RO 11	Formation of students' general ideas about the essence and types of time management, principles and methods of time resource management for more successful professional activities. Active learning methods are used - situational tasks, case method.	Fundamentals of Economics and Entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
Module 6 - Core	PD	SQ	Digital diagnostics of construction objects (Minor)			6	RO 4, RO 8	Studies modern methods of diagnostics, monitoring and testing of construction objects using innovative technologies, modern geodetic means of periodic and automatic monitoring (GPS measurements, tacheometry, leveling, laser scanning). Active learning methods are used - situational tasks, case method.	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification
competencies	PD	SQ	PowerBI Business Analytics (Minor)			7	RO 4, RO 6	Formation of students' skills and knowledge to collect, analyze and structure data in order to build interactive dashboards, program at the modern level of development of the	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Final certification

				N l: c t t e n l v v	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 project subject field and make decisions. Methods of active learning are used - brainstorming, working in small groups.	
Total		1830	61			

### 10. ЭКСПЕРТНЫЕ ЗАКЛЮЧЕНИЯ на образовательную программу 6В07130 – Автомобильные дороги и аэродромы

Реализация образовательной программы «6В07130 – Автомобильные дороги и аэродромы» 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 <u>АО КазДорНИИ.</u>

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 «6В07130 – Автомобильные дороги и аэродромы» по направлению подготовки кадров «6В071-Инженерия и инженерное дело», требованиям ГОСО, имеет четкую соответствует полностью последовательность при разработке, отвечает современным запросам рынка труда, профессиональным стандартам и может быть реализована для «6B07130 программе образовательной подготовки кадров по Автомобильные дороги и аэродромы» по направлению.

Эксперт к.т.н., в.н.с. АО «КаздорНИИ»



Айтбаев К.А

## ЭКСПЕРТНЫЕ ЗАКЛЮЧЕНИЯ на образовательную программу 6В07130 – Автомобильные дороги и аэродромы

Реализация образовательной программы «6В07130 – Автомобильные дороги и аэродромы» 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 <u>АО КазДорНИИ.</u>

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.

представленная на экспертизу образовательная Таким образом, дороги и аэродромы» по «6В07130 – Автомобильные программа направлению подготовки кадров «6В071-Инженерия и инженерное дело», госо, имеет четкую требованиям соответствует полностью последовательность при разработке, отвечает современным запросам рынка труда, профессиональным стандартам и может быть реализована для программе «6B07130 образовательной кадров по подготовки Автомобильные дороги и аэродромы» по направлению.

Эксперт к.т.н., в.н.с. АО «КаздорНИИ»



#### Рецензия

#### на образовательную программу по направлению подготовки «6В07130 – Автомобильные дороги и аэродромы»

Образовательная программа (бакалавриат) «6В07130 – 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 огражают преемственность дисциплин <u>Изыскание и</u> <u>проектирование</u> автомобильных дорог; Технология 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 «6В07130 – Автомобильные дороги и аэродромы».

Рецензент Зав.кафедрой «ТСиПСМ» КазАДИ им Л.Гончарова



Бектурсунова Г.С.

#### 12.РЕКОМЕНДАТЕЛЬНЫЕ ПИСЬМА

#### Уважаемый (ая) Салтанат Нурадиловна

Руководство «АО КазДорНИИ» в лице Ерембаев У.М. ознакомилось с содержанием образовательной программы «6В07130 - Автомобильные дороги и аэродромы» 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 <u>Изыскание и проектирование автомобильных дорог</u>; <u>Технология автомобильно-дорожного строительства</u>; Эксплуатация автомобильных дорог, Модернизация автомобильных дорог.

 увеличить количество часов, выделяемых на проведение производственных практик;

включить дисциплины:

-изыскание и проектирование автомобильных дорог;

-технология автомобильно-дорожного строительства;

эксплуатация автомобильных дорог;

модернизация автомобильных дорог.

Директор Алматинского филиала Ерембаев У.М. «АО КазДорНИИ» ФИЛНАЛ **КАЗЖОЛГЗИ** КАЗДОРНИИ

#### 13. ПРОТОКОЛЫ РАССМОТРЕНИЯ И УТВЕРЖДЕНИЯ

#### Академия логистики и транспорта

#### ПРОТОКОЛ №6

#### Заседания

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

#### г. Алматы

#### « <u>15</u> » 03 2023 года

Председатель: Исмагулова С.О. Секретарь: Жадраев Р.Ж.

Присутствовали: члены КОК УМБ, 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: Абдиржан А.С.

#### повестка дня:

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

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 обучающихсяпо включению новых дисциплин в КЭД и РУП приема 2023г.

**ВЫСТУПИЛ:** представительработодателейРГП 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<u>проектирования истроительство автомобильных дорог.</u> Вносим предложения о внесении в РУП следующих востребованных дисциплин Изыскание и проектирование автомобильных дорог; Технология автомобильно-дорожного строительства; Эксплуатация автомобильных дорог, Модернизация автомобильных дорог.

ВЫСТУПИЛ: обучающийсяАбдиржан А.С.

Считаем необходимым включить в РУП следующие дисциплины <u>Изыскание и</u> <u>проектирование</u> автомобильных дорог; Технология автомобильно-дорожного строительства; Эксплуатация автомобильных дорог, Модернизация автомобильных дорог

ПОСТАНОВИЛИ:

1. Информацию принять к сведению;

2. Учесть предложения и рекомендации работодателей и обучающихся;

 Рассмотреть включение в РУП следующие дисциплины:Изыскание и проектирование автомобильных дорог; Технология автомобильно-дорожного строительства; Эксплуатация автомобильных дорог, Модернизация 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: Абдиржан А.С.

### ПОВЕСТКА ДНЯ:

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

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

На кафедре <u>«Строительная инженерия»</u> было проведено заседание с привлечением представителей работодателей и обучающихся по обсуждению структуры и содержанию образовательной программы <u>6B07130- Автомобильные дороги и аэродромы»</u>

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;

 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 У Чигамбаев Т.О. Секретарь *Дурасское* Утепова А.У.

## 14. ЛИСТ СОГЛАСОВАНИЯ

No	Ф.И.О.	Место	Должность	Дата	Подпись
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