

Joint-Stock Company "Academy of Logistics and Transport"

ALT FOUNDED
1931



APPROVING IT
by the US ALT of solution
city of (Protocol no. 2)
President-Rector
Amirgalieva S. N.

EDUCATIONAL PROGRAM

Name: 6B07323- Railway construction, track and facilities

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 work and civil engineering

Date of registration in the register: 06.05.2021

Registration number: 6b07300160

Almaty, 2023 г.

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

1 DEVELOPED:		
<u>Associate Professor</u> (position)	 (signature)	<u>Alimkulov M.M.</u> (Full name)
<u>Head of Pch-46. st. Almaty</u> (position)	 (signature)	<u>D. G. Amirov</u> (Full name)
<u>Assistant Professor</u> (position)	 (signature)	<u>Karibayeva G.B</u> (Full name)
<u>Associate Professor</u> (position)	 (signature)	<u>A. K. Ibraimov</u> (Full name)
<u>Student gr. ZPPH-21-1p</u> (position)	 (signature)	<u>Kannazarova A..</u> (Full name)
2 EXPERTS:		
<u>Director of the branch of JSC NC "KTZ" - "Almaty branch of the backbone network"</u> (position)	 (signature)	<u>Zheksenbiev A. T.</u> (Full name)
<u>Head of the Track Department of the branch of JSC NC "KTZ" - "Almaty branch of the main network"</u> (position)	 (signature)	<u>Nurbolat R. V..</u> (Full name)
3 REVIEWER:		
<u>Candidate of Technical Sciences, Associate Professor, KazNTU named after K. I. Satpayev</u> (position)	 (signature)	<u>Dzholdasova K. K.</u> (Full NAME)
4 REVIEWED AND RECOMMENDED:		
<u>AC meeting (department) «...» Protocol №6 «15» 03 2023z</u>	 (signature)	<u>Ismagulova S. O.</u> (Full name)
<u>COC-UMB meeting «...» Protocol №7 «15» 03 2023z</u>	 (signature)	<u>Chigambaev T. O.</u> (Full name)
<u>EMC meeting Protocol №4 «29» 05 2023z</u>	 (signature)	<u>Zharmagambetova M. S.</u> (Full Name)

5 APPROVED by the decision of the Academic Council of «No. 13 of "30" 03 2023r. №13
6 UPDATED 28.0.04.2023.2023

2. NORMATIVE REFERENCES

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

1. Law of the Republic of Kazakhstan "On Education" dated July 27, 2007 No. 319-III (with amendments and additions as of March 27 2023, 2007).
2. National Qualifications Framework approved by the protocol of March 16, 2016 of the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations.
3. Industry framework of qualifications in the field of "Education", approved by the Minutes of the Meeting of the Industry Commission of the Ministry of Education and Science of the Republic of Kazakhstan on social partnership and regulation of social and labor relations in the field of education and Science No. 3 dated November 27, 2019.
4. State Mandatory Standard of Higher Education (Order No. 66 of the Minister of Science and Higher Education of the Republic of Kazakhstan dated 20February 20, 202366).
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 12аврыста 202August 12, 2012 No. 309.
6. Rules of organization of the educational process on credit technology of training 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 changes from 04april 2023 No. 145).
7. Classifier of training areas for personnel with higher and postgraduate education, approved by Order No. 569 of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018 (with amendments and additions as of June 05, 2020).
8. Algorithm for inclusion and exclusion of educational programs in the Register of Educational programs of Higher and Postgraduate Education, approved by Order No. 665 of the Minister of Education and Science of the Republic of Kazakhstan dated December 4, 2018 (with additions and amendments as of 23December 2-3, 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: "

3.PASSPORT OF THE EDUCATIONAL PROGRAM

№	Field name	Note
1	Registration number	6B07300160
2	Code and classification of the field of education	6B07 Engineering, manufacturing and Civil engineering
3	Code and classification of training areas	6B071 Engineering and Engineering
4	Code and group of the educational program (OP)	B074 –Urban planning, construction work and civil engineering
5	Name of the educational program (OP)	6B07323- Railway construction, track and facilities
6	Type of educational program (OP)	New
7	The purpose of the educational program (OP)	Training of personnel with professional competencies for the railway industry, which take into account the increasing requirements for the quality of specialists in the field of design, construction, maintenance and repair of railway tracks.
8	Level according to the International Standard Classification of Education (ISCED)	Level
9	National Qualification Framework (NQF) level	6
10	Level according to the Industry Qualification Framework (ORC)	Level 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 translation into the
13	Language of instruction	Kazakh, Russian
14	Volume of loans	240
15	Academic degree awarded	Bachelor of Engineering and Technology in the educational program "6B07323- Railway construction, track and facilities
16	Availability of an appendix to the license for the direction of training	KZ12LAA00025205 (010)
17	Availability of educational program accreditation (OP)	
	Name of the accreditation body	
	Validity period of accreditation	

4. GRADUATE COMPETENCE MODEL

Objectives of the educational program:

1. Formation of a person capable of self-improvement and professional growth with diverse social and humanitarian, natural science, special and specialized knowledge and interests.

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

3. Developing the ability to: find a compromise between various requirements (cost, quality, safety and deadlines) in long-term and short-term planning and make optimal decisions in the field of railway design, construction and operation; conduct research in research organizations under the guidance of leading specialists; master the culture of thinking.

4. Formation of the ability to: generalize, analyze and perceive information; set goals and choose ways to achieve it.

5. Assistance in forming the graduate's readiness to: perform calculation and design work; develop design and technical documentation; develop methodological materials, proposals and measures for the design, construction, and operation of railways.

6. Formation of graduates ' readiness to conduct technical and economic analysis, substantiation of decisions taken and implemented in the field of design, construction, operation of railways and modernization of track facilities; application of the results in practice, striving for self-development and improving their skills and skills.

7. Promote the formation of graduates ' readiness for economical and safe use of natural resources, energy and materials in the design, construction and operation of railways.

Learning outcomes:

PO1-Demonstrate knowledge of mathematical and physical methods, measurement of electrical quantities during the operation of transport infrastructure facilities.

PO2 - Assess the stability, reliability and durability of transport structures based on theorems and equations of motion of a mechanical system, hypotheses and strength criteria.

PO3 – Classify the building structures of the track, bridges, pipes and tunnels for work in various geological conditions and soils, the stability of the base and foundations with the selection of the necessary building materials according to their purpose and properties

RO4 - Develop a project for a topographic survey of an object using the basics of geodesy, geoinformatics, transport infrastructure design and information and communication technologies with the addition of these skills in the process of practice for use during the design of transport facilities.

RO5 - To argue for solutions to the problems of labor protection and preservation of the environmental ecosystem, in accordance with the legislative framework of the Republic of Kazakhstan and international requirements, using resource-saving technologies in the construction of transport facilities.

PO6-Select data from theoretical economic knowledge for the development of economic analysis skills using models and laws of economic science, for structuring data and building interactive dashboards, BI technology models, using time resource management.

RO7 - Plan the construction of transport infrastructure facilities using technologies for new railways and the reconstruction of existing railways using modern methods.

RO8-Classify track construction machines and mechanisms to perform the required type and volume of track work with mechanized and mechanized track maintenance, to increase productivity and quality of work, followed by the consolidation of skills for the period of practice in track facilities enterprises.

RO9 - Justify design and survey work during the construction of railways for further activities in the field of transportation, building logistics systems, using the methods of scientific research, with the submission of documentation in the state, Russian and English languages (at the request of the customer) in compliance with the fundamentals of law and anti-corruption legislation.

PO10- Design a modern railway track with the justification of devices, according to track classes, turnouts and blind intersections, station tracks for the uninterrupted and safe passage of trains at set speeds for further reconstruction of the running track and station facilities in connection with an increase in carrying capacity.

RO11 - To predict the spiritual, moral and physical achievements of the individual in order to set and solve problems that arise during the repairs of the backbone network, using the ability to work in a team, team leadership and socio-psychological factors aimed at personal achievements of a person.

Area of professional activity: Enterprises, organizations and complexes that provide surveys, construction, operation, maintenance, survey, repair and reconstruction of railway tracks.

Objects of professional activity:

- railway track.
- track facilities.
- artificial structures (bridges, tunnels, culverts, intersections at different levels) of railways;
- methods and means of quality control of construction, reconstruction and repair works, as well as works performed during the current maintenance of the railway track;
- methods and technical means of monitoring the condition of the railway track.

Types of professional activity:

- production and technological;
- organizational and managerial;
- design and survey and design and development work

Functions of professional activity:

1) Organization of production of building materials and structures for objects of the transport and communication complex; organization of design, construction, maintenance and repair of railway tracks; use of standard methods for calculating the reliability of railway track structures.

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 the railway track; technical diagnostics of the railway track, the use of track measuring and flaw detection tools; analysis and evaluation of production and non-production costs or resources for high-quality surveys, construction, maintenance and repair of the railway track.

3) Development of new technologies, development of design and technological documentation using computer technologies; calculation of strength and stability under various types of loading of railway track loading, development of projects for new and reconstruction (modernization) of existing railways; selection of building materials for the manufacture of railway track structures, justification of technical solutions; development of technical tasks and technical conditions for projects new and reconstruction (modernization) of existing railway lines, railway track structures, technological processes of railway track maintenance and repair, means of technical diagnostics of the railway track using modern information technologies and computer programs; Research of new railway track structures that meet the latest achievements of science and technology, safety requirements.

List of specialist positions:

Head of the Capital construction Department, head of the production (technical, production and technical) department, head of the site (shop), head of the logistics Department, head of the Labor Safety and Health Department, head of the labor regulatory research laboratory, head of the tool department, head of the production laboratory (production control), head of the control department quality management department, head of the track management laboratory, site master (road master), work producer (foreman), master of industrial training, foreman for current maintenance and repair of the track, track crawler, project manager, project manager, lead engineer, design engineer, process engineer (technologist), repair engineer, engineer inventory engineer of buildings and structures, metrology engineer, labor organization engineer, labor rationing engineer, pre-production engineer, occupational safety and health engineer, environmental protection engineer (ecologist), laboratory engineer, engineer, chief specialist, leading specialist, specialist, design technician, technician technical engineer, inventory technician of buildings and structures, metrology technician, labor technician, technician, laboratory technician, laboratory assistant.

Professional certificates obtained at the end of training: not provided

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:

- training program.
- production area.
- production (pre-graduate).

Educational practice.

During the course of practical training, students should gain practical skills in making geodetic measurements on the ground using modern geodetic equipment and GIS technologies, working on geodetic tools, making topographic terrain plans of various scales, leveling the route with the construction of profiles of a given direction with the corresponding scales of construction and solving various engineering and geodetic problems in the production of geodetic measurements on localities.

Production practice.

During the internship period, the student receives certain practical knowledge, skills and abilities in the chosen Educational Program.

The goals of industrial practice are: to deepen and consolidate the theoretical knowledge obtained in the course of training; to gain skills in the practical use of professional knowledge obtained during theoretical training; to learn the skills of solving practical and managerial problems; to get acquainted with the specifics of the bachelor's professional activity in a particular production; to form a professional position of a specialist, a style of behavior, and to master 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 acquire initial practical experience.

Pre-graduate / industrial practice.

The content of pre-graduate practice is determined by the topic of the thesis. During the period of 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 thesis. Practice involves working out a given problem (topic of the thesis) on the materials of a specific 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 as a specialist, organizational skills, decision-making skills, executive discipline, responsibility, initiative.

Final certification is conducted in the form of writing and defending a thesis or preparing and passing a comprehensive exam. The purpose of the final certification is to assess the results of training and mastered competencies achieved upon completion of the study of the educational program of higher education.

The thesis 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 actual problem in the field of the 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 IN THE EDUCATIONAL PROGRAM WITH ACADEMIC DISCIPLINES/MODULES

#	Name of the discipline	Number of credits	Matrix of correlation of learning outcomes in the educational program with the academic disciplines										
			RO1	RO2	RO3	RO4	RO5	RO6	RO7	RO8	RO9	RO10	RO11
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				+							
	Module socio-political knowledge	8											
6	Sociology	2											+
7	Cultural studies	2											+
8	Political Science	2											+
9	Psychology	2											+
10	Physical education	8											+
11	Ecology and life safety	5					+						
12	Research Methods	5									+		
13	Foundations of law and anti-corruption culture	5									+		
14	Basics of Economics and business	5						+					
15	Engineering mathematics	9	+										
16	Applied physics	9	+										
17	fundamentals of computer simulation	6				+							
18	Building materials	6			+								
19	Geology, soil mechanics, foundations	6			+								
20	Building Construction	6			+								
21	Labor Protection	6					+						
22	Electrical and basic electronics	6	+										
23	Educational practice (geodezicheskaya)	2				+							
24	Theoretical mechanics	6	+	+									
25	Engineering mechanics 1	6		+									
26	strength of materials	6	+	+									
27	Engineering mechanics 2	6		+									
28	Structural mechanics	6	+	+									
29	Engineering mechanics 3	6		+									
30	Engineering geodesy	6				+							
31	Fundamentals of Geoinformatics	6				+							
32	Basics of design of transport facilities	6				+							
33	Introduction to the design of transport infrastructure	6				+							
34	Travel, construction machinery and equipment	6			+					+			
35	Mechanization of track facilities	6								+			
36	Bridges and tunnels on railways	9			+								
37	Railway track	9		+								+	
38	Railway connections and intersections	6										+	
39	Survey and design of Railways	9									+		
40	Technology and mechanization of railway maintenance	9								+			+
41	Organization and planning of railway maintenance	9			+					+			
42	Industrial practice 1	3								+			

43	Production practice 2	4								+				
44	Technology of railway construction	6								+	+			
45	Railway technology construction	6								+	+			
46	Organization of construction of transport infrastructure	6					+			+				
47	Organization and planning of transportation facilities	6					+			+				
48	Modernization of railway lines	6					+					+		
49	Reconstruction of Railways	6					+					+		
50	Managerial Economics (Minor)	3							+			+		
51	Transport logistics (Minor)	3										++	+	
52	Resource saving in transport (Minor)	3					++						+	
53	Time management (Minor)	3							++					+
54	Digital diagnostics of construction	sites 3					++					+		
55	Business Analytics Power BI Business analytics (Minor)	3					++			+				
56	FINAL CERTIFICATION	8	+	+	+	+	+	+	+	+	+	+	+	+

6. STRUCTURE OF THE BACHELOR'S DEGREE PROGRAM

n /	a Name	of discipline cyclesTotal labor	
		intensity in academic hours	in academic credits
1	Cycle general education disciplines (OD)	1680	56
1)	Mandatory component	1530	51
	Andhistory of Kazakhstan	150	5
	Philosophy	150	5
	Foreign language	300	10
	Kazakh (Russian) language	300	10
	Information and communication technologies	150	5
	Socio-political knowledge module (sociology, political science, cultural studies, psychology)	240	8
	Physical culture	240	8
2)	University component and (or) elective component	150	5
2	Cycle of basic and profile disciplines (BD, PD)	not less than 5280	not less than 176
1)	University component and / or optional component		
2)	Professional practice		
3	Additional types of training (FEO)		
1)	Optional component		
4	Final certification	not less than 240	not less than 8
	Total	not less than 7200	not less than 240

7. CURRICULUM FOR THE ENTIRE PERIOD OF STUDY

JSC "Academy of Logistics and Transport"

CURRICULUM

Form of study: full-time

Training area:
68073-Architecture and Construction

Duration of training: 4 years

Group of educational programs:
8074-Urban planning, construction projects
works and civil engineering

Name of the educational program:
6807322-Railway construction,
path and track management

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	KIP (KR)	Total hours	Classroom settings			SRD		1st course		2nd course		3rd year		4th year				
								lectures	practical features	laboratory	SRDP	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	
1. CYCLE OF GENERAL EDUCATION SUBJECTS (GED):																							
1.1.	Required component:		1630	61	13		1630	128	368	16	128	917	21	16	7	7	0	0	0	0	0		
1.1.1.	21-08-OK-01	History of Kazakhstan	160	6	3		160	30	15		8	97			6							SRSFV	
1.1.2.	21-08-OK-02	Philosophy	160	6	4		160	30	15		8	97			6							SRSFV	
1.1.3.	21-08-OK-03	Foreign language	300	10	1,2		300		90		16	184	8	8								YAP	
1.1.4.	21-08-OK-03/03/03	Kazakh (Russian) language	300	10	1,2		300		90		16	184	8	8								YAP	
1.1.4.	21-08-OK-04	Information and communication technologies	160	6	1		160	30		15	8	97	6									ICTs	
1.1.6.	21-08-OK-05	Basic-ethical knowledge, module:																					
		Sociology						7	15		8	30			4							SRSFV	
		Cultural Studies						8	15		8	29											SRSFV
		Political Science	348	8	1,2		348		7	15		8	30										SRSFV
1.1.6.	21-08-OK-06	Psychology						8	15		8	29	4									SRSFV	
1.1.7.	21-08-OK-08	Physical Culture	240	8	1,2,3,4		240		80		32	120	3	2	2	3						SRSFV	
1.2.	Component of your choice:		160	6	1	0	160	30	15	0	8	97	0	0	6	0	0	0	0	0	0		
1.2.1.	21-08-KV-09/09/09	Module of a component for choosing a OGD:																					
		Ecology and life safety																					ATS&D
		Methods of scientific research																					SRSFV
		Fundamentals of economics and entrepreneurship	160	6	3		160	30	15		8	97			6								LMT
1.2.1.	21-08-KV-09/09/09	Fundamentals of law and anti-corruption culture																				SRSFV	
TOTAL for the OGD cycle:			1680	68	14	0	1680	150	373	15	128	1014	21	16	12	7	0	0	0	0	0		
2. CYCLE OF BASIC DISCIPLINES (BD):																							
2.1.	University component:		1680	68	8		1680	270	188	76	64	1016	9	16	9	2	6	12	6	0	0		
2.1.1.	21-08-KV-04	Engineering Mathematics	270	9	2		270	45	45		8	172			6								Q
2.1.2.	21-08-KV-05	Applied Physics	270	9	1		270	45	30	15	8	172	9										Q
2.1.3.	21-08-KV-06	Fundamentals of computer modeling	180	6	2		180	30	30		8	112		6									ICTs
2.1.4.	21-08-KV-07	Building materials	180	6	3		180	30	15	15	8	112			6								И
2.1.5.	21-08-KV-08/08/08	Geology, soil mechanics, foundations and foundations	180	6	5		180	30	15	15	8	112					6						И
2.1.6.	21-08-KV-09	Building structures	180	6	6		180	30	30		8	112						6					И
2.1.7.	21-08-KV-10	Electrical engineering and basic electronics	180	6	6		180	30	15	15	8	112						6					И
2.1.8.	21-08-KV-01	Labor protection	180	6	7		180	30	15	15	8	112							6				ATS&D
2.1.9.	21-08-KV-02/02/02	Training practice (pedagogical)	80	2	4		80									2							И
2.2.	Component of your choice:		1080	36	6		1080	180	150	60	48	672	0	0	12	12	12	0	0	0	0		
2.2.1.	21-08-KV-11/11/11	Theoretical mechanics	180	6	3		180	30	30		8	112			6								И
		Engineering mechanics 1																					
2.2.2.	21-08-KV-12/12/12	Material resistance	180	6	4		180	15	30	15	8	112			6								И
		Engineering mechanics 2																					

2.2.3.	23-0-B-KV- SMeh	Construction mechanics	180	6	5		180	30	30		8	112										6				si	
	23-0-B-KV- IMeh3	Engineering mechanics 3																									
2.2.4.	23-0-B-KV- IGesd	Engineering geodesy	180	6	3		180	30	15	15	8	112					6									si	
	23-0-B-KV- OGI	Fundamentals of geoinformatics																									
2.2.5.	23-0-B-KV- OPT3	Basics of designing transport structures	180	6	4		180	15	15	30	8	112					6									si	
	23-0-B-KV- VPOT3	Introduction to the design of transport infrastructure facilities																									
2.2.6.	23-23/28-B-KV- PSMO	Track and construction machinery and equipment	180	6	5		180	30	30			8	112													ATSIBZHD	
	23-23/28-B-KV- MPH	Mechanization of track facilities																									
	TOTAL by DB cycle:		2760	92	15	0	2760	420	345	135	112	1688	9	15	18	14	18	12	6	0	0						
3.	CYCLE OF PROFILE DISCIPLINES (PD):																										
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.	23-23-B-KV- MTZHD	Bridges and tunnels on railways	270	9	4		270	45	45		8	172				9										si	
3.1.2.	23-23-B-KV- ZhP	Railway track	270	9	5		270	45	45		8	172				9										si	
3.1.3.	23-23-B-KV- SPZHP	Connections and intersections of railway tracks	180	6	6		180	30	30		8	112											6			si	
3.1.4.	23-23/28-B-KV- IPZH	Railway research and design	270	9	7		270	45	45		8	172											9			si	
3.1.5.	23-23-B-KV- TMTOZH	Technology and mechanization of railway track maintenance	270	9	7		270	45	45		8	172											9			si	
3.1.6.	23-23-B-KV- OPTOZH	Organization and planning of railway track maintenance	270	9	8		270	45	45		8	172											9			si	
3.1.7.	23-0-B-KV- PPt1	Production practice 1	90	3	6		90																3			si	
3.1.8.	23-0-B-KV- PPt2	Production practice 2	120	4	9		120																		4	si	
3.2.	Component of your choice:		810	27	6	0	810	135	135	0	48	492	0	0	0	0	0	3	9	9	6	0					
3.2.1.	23-23/28-B-KV- TZhdS	Railway construction technology	180	6	6		180	30	30		8	112											6			si	
	23-23/28-B-KV- TSZhd	Railway construction technology																									
3.2.2.	23-0-B-KV- GOOT3	Organization of construction of transport infrastructure facilities	180	6	7		180	30	30		8	112											6			si	
	23-0-B-KV- OPST3	Organization and planning of construction of transport structures																									
3.2.3.	23-23/28-B-KV- RZhD	Reconstruction of railways	180	6	8		180	30	30		8	112													6	si	
	23-23/28-B-KV- MZhdL	Modernization of railway lines																									
Minor program 1 "Resource Management"																											
3.2.4.	23-0-B-UE	Managerial economics	90	3	5		90	15	15		8	52												3			LMT
3.2.5.	23-0-B-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
Minor program 2 "Digital competencies"																											
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-TaDOB	Digital diagnostics of construction sites	90	3	6		90	15	15		8	52													3		si
3.2.6.	23-0-B-BAPBI	Power BI Business Intelligence	90	3	7		90	15	15		8	52														3	ICTs
TOTAL for the PD cycle:			2550	85	14	0	2550	390	390	0	96	1464	0	0	0	9	12	18	27	15	4						
TOTAL FOR THE THEORETICAL COURSE OF 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-KV-4A	FINAL CERTIFICATION	240	8																							si
TOTAL FOR THE ENTIRE TRAINING PERIOD:			7230	241									30	31	30	30	30	30	33	15	12						
5. ADDITIONAL TYPES OF TRAINING (DVE):																											
5.1.	23-0-B-0VO-V	Volunteering	30	1	1		30		10		8	12	1														si
5.2.	23-0-B-0VO-PG	Financial literacy	90	3	3		90	15	15		8	52					3										LMT

AGREED:

Vice-Rector for AD *Migaleev* Zharmagambetova M. S.

DAPC Director *MPH* Lipskaya M. A.

DEVELOPED BY:

Director of the TI Institute *Chigambaev T. O.* Chigambaev T. O.

Head of the Department "SI" *Ismagulova S. O.* Ismagulova S. O.

8. CATALOG OF UNIVERSITY COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM

Level of education: Bachelor

6B07323- Railway construction, track and facilities

Duration of study: 4 years

Year of admission: 2023years

Cycle	Component	Name of the discipline	Total labor		intensity Semester	Learning outcomes	Brief description	of the discipline	Prerequisites
			Post requirements academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10
BD	VK	Engineering mathematics	270	9	2	PO1	Mastering the mathematical apparatus for solving theoretical and applied problems of a specific profile, getting an idea of mathematical modeling and interpretation of the obtained solutions. Questions of linear algebra, analytic geometry, mathematical analysis, differential equations, and series theory are considered. Within the framework of the discipline, calculation and graphic work is performed. Active learning methods – teamwork, brainstorming.	Basic school knowledge in mathematics	Applied physics
BD	VK	Applied Physics	270	9	1	PO1	Formation of students ' skills and abilities in the use of fundamental laws, theories of classical and modern physics, as well as methods of physical research, thinking, scientific outlook, in independent cognitive activity, to be able to model physical situations using computer technologies and ideas about modern physics. natural science worldview. Within the framework of the discipline, calculation and graphic work is performed. Laboratory work is performed on the Coursera platform. Active learning methods – teamwork, brainstorming.	Basic school knowledge in mathematics	Engineering mathematics, Fundamentals of computer modeling. Theoretical mechanics of Building materials
BD	VC	Fundamentals of computer modeling	180	6	2	PO4	Competencies are formed about the purpose of modeling tools, technical and software tools, as well as in the development of object models for various purposes, as well as programming languages Python, Java etc. The discipline uses interactive teaching methods, computational and analytical methods, case-task methods, and game methods.	Basic school knowledge in mathematics	Fundamentals of transport ecology, Labor protection
BD	VK	Building materials	180	6	3	PO3	Forms basic knowledge about the types of building materials, methods of obtaining them, properties and areas	Ecology and life safety.	Geology and soil mechanics,

							of application of various building materials, familiarization with standard methods for testing building materials and determining their properties, standardization of requirements for building materials depending on depends on the conditions of their use. Within the framework of the discipline, interactive methods are used: case-learning, discussion.	Fundamentals of transport ecology	foundations and foundations
BD	VK	Geology, soil mechanics, foundations and foundations	180	6	5	PO3	Form the necessary set of knowledge about engineering and geological processes and phenomena, soil properties, defects that occur during the joint operation of soils, foundations and foundations, stressed ground conditions of foundations, principles of operation of structures on modern field and laboratory installations and devices, for solving geotechnical problems, on general laws and principles of construction of structures. Guest lectures and the calculation and analytical method are used.	Engineering mathematics, Applied Physics	Engineering Mechanics 1,2,3, Material resistance
BD	VK	Building structures	180	6	6	PO3	Forms the basic knowledge of calculating and designing load-bearing structures using computer technologies (Excel, AutoCAD, Revit). You can also learn how to choose the right materials, shape of cross-sections, design scheme of the structure, based on the purpose and purpose of operation, and develop design solutions for newly constructed or reinforced transport structures. The discipline uses interactive teaching methods, calculation and graphic method.	Engineering Mathematics, Applied Physics	Engineering Mechanics, Labor Protection, Connections and intersections of railway tracks, Technology and mechanization of railway track maintenance, Technology of railway construction
BD	VK	Electrical Engineering and fundamentals of electronics	180	6	6	PO1	Studies electrical circuits of direct, alternating and three-phase currents, the principle of operation, purpose and rules of operation of transformers and electrical machines, methods for measuring electrical quantities, the use of semiconductor diodes in rectification circuits and logical elements. As a result of studying the discipline, students should be able to apply the basic laws and relations 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 perform verification of electrical measuring devices. The discipline uses interactive	Engineering mathematics, Applied Physics	Engineering mechanics, Labor protection, Technology and mechanization of railway track maintenance, Railway surveys and design, Organization and planning of railway track maintenance

							teaching methods, computational and analytical methods, and case-task methods.		
BD	VK	Labor protection	180	6	7	PO5	Training of specialists on the theoretical and practical foundations of safety, harmlessness and facilitation of working conditions at maximum productivity, on issues of the legislative and regulatory framework in the field of labor protection. Teaching methods - case-study analysis, group discussions.	Engineering mathematics, Applied Physics, Theoretical Mechanics, Building materials	Engineering mechanics 1,2,3, Geology and Soil mechanics, Modernization of railway lines, Reconstruction of railways, Organization and planning of railway track maintenance
BD	VK	Educational practice (<i>geodetic</i>)	60	2	4	PO4	Educational practice (geodesy) The organization of educational practice is aimed at providing bachelor students with the areas of professional activity and training profiles, with the ability to survey the terrain geodesically, direct and reverse course, leveling survey, reference to reference points, calling out points and altitude marks from the map, solving typical engineering and geodetic problems.	Engineering Mathematics, Applied Physics, Fundamentals of Computer Modeling, Building Materials, Geology, Soil Mechanics, Foundations and foundations.	Production practice 1, Production practice 2.
PD	VK	Artificial structures on railways	270	9	4	PO3	Develops skills in maintenance and repair of spans, supports, foundations and foundations of bridges and pipes, various methods and methods of maintaining spans, determining defects and deformations of bridge structures and pipes, using the necessary equipment, machinery and equipment. mechanisms for efficient implementation of various types of repairs and reconstructions Interactive methods of teaching the discipline are used to draw up technological maps of work production. As part of the discipline, there are field classes in the department's branch and guest lectures by top managers.	Engineering geodesy, Fundamentals of geoinformatics, Fundamentals of design of transport structures,	Railway track arrangement., Стрелочные Switches and blind intersections, Technology of railway track repairs, Organization of current maintenance of railway track
PD	VK	Railway track arrangement	270	9	5	PO10	Study of requirements for railway track depending on the classification of railway lines, structural elements of upper and lower railway structures track, working conditions and deformation of the railway track, standards and tolerances for the maintenance of the track gauge, methods for	Artificial structures on railways Basics of designing transport	Switchbacks and blind intersections, Technology of railway track repairs,

							designing and calculating the track gauge, transverse profiles of the road and methods for calculating the embankment for stability. The teaching methods are: lecture-practice conference, problem solving, conducting thematic colloquiums. As part of the discipline, there are field classes in the department's branch and guest lectures by top managers.	structures Introduction to the design of transport infrastructure objects	Organization of current maintenance
PD	VK	Switchbacks and blind intersections	180	6	6	PO10	Study of classifications of connections and intersections of railway tracks, purposes, types and structural elements of single ordinary switchbacks cross switches and blind intersections, standards and tolerances for the maintenance of connections and intersections of railway tracks, methods for designing and calculating a single ordinary switch. Methods of teaching are active forms of learning: discussion, demonstration of slides or educational films, brainstorming. The discipline includes field classes in the department's branch and guest lectures by top managers	Artificial structures on railways Basics of designing transport structures Introduction to the design of transport infrastructure	facilities Technology of railway track repairs, Organization of current railway track maintenance.
PD	VK	Research and design of railways	270	9	7	PO9	Studies the discipline as a basis for research and development of road projects in accordance with the SNiP for this category of road, the main operational and energy indicators of the railway route laid on the map in horizontal lines with the placement of artificial structures and the choice of a rational version of the line using computer technologies (Excel, AutoCAD). Active and passive methods of teaching the discipline are used.	Engineering geodesy, Fundamentals of Geoinformatics, Fundamentals of design of transport structures, Artificial structures on railways	Modernization of railway lines, Reconstruction railways
PD	VK	Technology of railway track repairs	270	9	7	PO11	Study of classification, types, criteria of purpose, frequency and schemes of track repairs, technical conditions for laying and repairing the track, composition and methods of performing track repair works, methods of designing technological processes for the complex of track repair works, purposes and activities of production bases track machine stations. Active and passive methods of teaching the discipline are used. As part of the discipline, there are field classes in the department's branch and guest lectures by top managers.	Artificial structures on railways, Switches and blind intersections, Railway track construction, Track and construction machinery and equipment	Organization of current maintenance of railway track, Production practice 2
PD	VK	Organization of current	270	9	8	PO8	Study of technical, technological and organizational foundations of track management, composition, tasks and	Artificial structures on railways,	Production practice 2, FINAL

		maintenance of railway track					main directions organizational structure of track management, rules of track management, basic provisions of planning in track management, methods and means of diagnostics of railway traffic, issues of protection of the railway track from snow and sand drifts, operational plans for snow, sand and water fighting. Active learning methods are used - situational tasks, project method, case method. As part of the discipline, there are field classes in the department's branch and guest lectures by top managers.	Switches and blind intersections, Railway track construction, Railway track repair technology, Track and construction machinery and equipment	CERTIFICATION
PD	VK	Production practice 1	90	3	6	PO8	main tasks of production practice are: consolidation of theoretical knowledge and practical skills in the chosen educational program in industrial enterprises. In this context, you can gain experience in organizational work, obtain a working specialty, and develop practical skills and competencies in the process of mastering a bachelor's program. It is carried out in the bases of practices at enterprises in accordance with this educational program.	Artificial structures on railways, Railway track	construction Production practice 2
PD	VK	Production practice 2	120	4	9	PO8	The purpose of bachelor's practice is to ensure the relationship between the theoretical knowledge obtained during the assimilation of the chosen educational program and practical activities. The objectives of this practice are to consolidate and deepen the theoretical knowledge gained by students in the course of training, collect information for writing the final qualification work, study best practices at the enterprise, as well as gain experience in independent research work, master various methods of scientific work. It is carried out in the bases of practices at enterprises in accordance with this educational program.	Construction of a railway track., Switches and blind intersections, Technology of railway track repairs, Organization of the current maintenance of the railway track	FINAL CERTIFICATION
PD	VK	FINAL CERTIFICATION	241	8			The objectives of the thesis are to identify the degree of mastering the content of the educational program by the bachelor, to check his readiness for independent activity in the direction of the educational program, to consolidate and deepen practical work skills. It also provides for passing a comprehensive exam.		
Total			3420	114					

9. CATALOG OF ELECTIVE COMPONENT DISCIPLINES

ABOUT THE EDUCATIONAL PROGRAM

6B07323- Railway construction, track and facilities

Education level: **Bachelor's degree** Duration of study: **4 years**

Year of admission: **2023**

Cycle	Component	Name of the discipline	Total labor		intensity Semester	Learn ing outco mes	Brief description	of the discipline	Prerequisites	
			Post requirem ents academi c hours	acade mic credit s						
1	2	3	4	5	6	7	8	9	10	
OOD	KV	Ecology and life safety	150	5	3	PO5	Study of the main environmental concepts, environmental problems and approaches to their solution, sources and types of environmental pollution by enterprises, principles regulation of 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	
		Methods of scientific research				PO9	Students ' acquisition of theoretical and applied knowledge on methods of scientific research of problems in the field under study, training of specialists with cognitive skills in the field of science, formation of deep ideas about the content of scientific research activities, their methods and forms of knowledge.			History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology
		Fundamentals of economics and Entrepreneurship				PO6	Studies the activities of enterprises in various types of market, the model of equilibrium and market functioning, state regulation of prices and tariffs. Considers 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 learning methods: case studies; business role-playing games, group work.		
		Fundamentals of law and anti-corruption culture				PO9	Increase of public and individual legal awareness and legal culture of students, as well as formation of a system of knowledge and civic position on combating corruption as an anti-social phenomenon. As a result of studying the course, the student should master the fundamental concepts of law, the constitutional structure of state power of the Republic of Kazakhstan, the rights and freedoms of citizens enshrined in the Constitution, the mechanism and protection of legitimate interests of a person in case of their violation.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology	Final attestation
BD	KV	Theoretical mechanics	180	6	3	PO2	Introduce you to the basic concepts, laws and theorems that allow you to compose and study equations describing the behavior of mechanical systems, develop logical thinking and understanding that the laws of mechanics express the laws of mechanical motion of bodies expressed in mathematical form, the ability to write down a specific phenomenon in mathematical form, the formation of practical skills in applying the basic methods of mechanics in balance of mechanical systems in the study of disciplines of the professional cycle and solving specific problems that have to be faced in professional activity. Active learning methods – performing and defending individual calculation and graphic works.	Engineering mathematics, Applied Physics.	Material resistance, Engineering Mechanics 2, Construction Mechanics, Engineering Mechanics 2
		Engineering mechanics 1				PO2	Formation of logical thinking and scientific foundation of engineering education. Study of the laws of motion and equilibrium of material bodies, construction of mathematical models of behavior of mechanical systems using theorems of mechanics. Application of methods for studying the equilibrium and motion of mechanical systems for solving technical problems. Active learning methods include the use of interactive tools, a blitz survey – a series	Engineering mathematics, Applied physics	Material resistance, Engineering Mechanics 2, Construction mechanics, Engineering Mechanics 2

							of short questions, and performing individual calculation and graphic works.		
BD	KV	Material resistance	180	6	4	PO2	Formation of a set of knowledge in the field of engineering calculations for simple and complex resistance to strength, rigidity and stability of structural elements that provide the required reliability and safety of products under static and static conditions. dynamic loads using the forms of static equilibrium conditions, using the methods of differential and integral calculus. Active learning methods – performing individual calculation and graphic tasks.	Engineering mechanics 1, Geology and soil mechanics,	Construction mechanics, Engineering mechanics 3, Track, construction machinery and equipment, Track management Mechanization
		Engineering mechanics 2				PO2	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, load research skills structural elements, construction of design schemes for machine parts and product calculations to meet the requirements of reliability and efficiency under the influence of static and dynamic loads. Active learning methods – performing individual calculation and graphic tasks.	Engineering mechanics 1 Geology and soil mechanics, foundations and foundations	Construction mechanics, Engineering mechanics 3, Track, construction machinery and equipment, Track management Mechanization
BD	KV	Construction mechanics	180	6	4	PO2	Formation of basic laws of deformation of rod systems that make up the frame of structures, when exposed to external forces in order to ensure strength, stability, basic methods for calculating typical structures and structures. Formation of skills in designing typical structures related to the choice of design scheme and determination of the most loaded structural elements, and calculation of internal forces and stresses.	Engineering mathematics, Applied physics, Engineering mechanics 1,2	Railway construction technology, Railway construction technology, Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures
		Engineering mechanics 3				PO2	Formation of design skills of structures and structures related to the choice of the design scheme and determination of the most loaded structural elements, and calculation of internal	Engineering mathematics, Applied physics, Engineering mechanics 1,2	Railway construction technology, Railway construction technology,

							forces and stresses, the main regularities of deformation of the core systems that make up the frame of structures, when exposed to external forces to ensure strength, stability, basic methods for calculating typical structures and structures.		Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures
BD	KV	Engineering geodesy	180	6	3	PO4	Studies the composition and technology of geodetic works that provide surveys, design, construction, operation of structures, the main requirements for solving standard problems. engineering and geodetic problems, their geometrical essence. Gets skills in reading a topographic map, solving corresponding problems of both graphic and mathematical calculation on its basis. The discipline uses interactive teaching methods.	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2,3	Fundamentals of design of transport structures, Introduction to the design of transport infrastructure objects, Artificial structures on railways Railway surveys and design, Modernization of railway lines, Reconstruction of railways
		Fundamentals of geoinformatics				PO4	Study of general information about geoinformation systems, basic terms and concepts, data input and output issues, 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 source information, creating and editing objects. The discipline uses interactive teaching methods.	Engineering Mathematics, Applied Physics, Engineering Mechanics 1,2,3	Fundamentals of design of transport structures, Introduction to the design of transport infrastructure objects, Artificial structures on railways Research and design of railways, Modernization of railway lines, Reconstruction of railways
BD	KV	Fundamentals of design of transport structures	180	6	4	PO4	Study of the basic rules (methods) for constructing and reading drawings, methods for solving metric and positional problems, rules for drawing up design documentation in accordance with ESKD standards, mastering the skills of	Engineering mathematics, Applied Physics, Engineering Mechanics 1,2,3	Artificial structures on railways Surveys and design of railways, Modernization of

							sketching, depicting technical products, drawing drawings using graphic tools (AutoCAD, Compass 3D). The discipline provides software training, computer modeling and practical analysis of results.		railway lines, Reconstruction of railways
		Introduction to the design of transport infrastructure objects				PO4	Principles and methods of graphic and geometric modeling of engineering problems, general requirements of ESKD, SPDS and other regulatory documents for the implementation and design of drawings, modern methods of automating graphic works, the possibility of automated creation of geometric models of spatial objects and drawing drawings. Creating 2D and 3D models in the framework of graphic systems (Compass 3D, Solidworks). The discipline provides software training, computer modeling and practical analysis of results.	Engineering mathematics, Applied Physics, Engineering mechanics 1,2,3	Artificial structures on railways Surveys and design of railways, Modernization of railway lines, Reconstruction of railways
BD	KV	Track, construction machinery and equipment	180	6	5	PO8	Study of track structures, construction machinery and equipment, their technical capabilities when used for renewal, repair and maintenance the upper structure of the track, small artificial structures, in the construction of railways; means of small mechanization, energy supply for track and construction, as well as various types of loading and unloading and transport operations; machines and mechanisms for monitoring the state of the geometric parameters of the rail track and rail flaw detection. The discipline uses interactive teaching methods.	Ecology and life safety, Engineering geodesy, Construction materials, Electrical engineering and fundamentals of electronics	Switches and blind intersections, Technology of railway track repairs, Organization of current maintenance of the railway track, Production practice1, 2
		Mechanization of track management				PO8	Study of designs, theory and calculations of track machines received in the track management of JSC NC "Қазақстан Kazakhstan Temir zholy"" application for repairing and maintaining the road, ballasting and lifting the track, cleaning crushed stone, assembling, disassembling and laying the rail grid, compacting and stabilizing the ballast layer, straightening and finishing the railway track, as well as diagnostic tools and equipment for monitoring the geometry and condition of	Ecology and life safety, Engineering geodesy, Construction materials, Electrical engineering and basic electronics	Switches and blind intersections, Technology of railway track repairs, Organization of current maintenance of railway track, Production practice1, 2

							the rail track, cleaning the track from snow.		
PD	KV	Railway construction technology	180	6	6	RO7	Study of regulatory, technical and technological foundations of railway construction, basic principles of construction of railways, basic principles of construction of railways. provisions of regulatory and technical documents on construction production, methods for designing the production of certain types of work on the construction of a railway line section, taking into account the regional physical, geographical, natural and climatic features of the main network. The methods of training are interactive form of training: analysis of specific situations, project method. As part of the discipline, there are field classes in the department's branch and guest lectures by top managers.	Construction materials, Artificial structures on railways, Railway track construction, Track, construction machinery and equipment, Track management Mechanization	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures, Reconstruction of railways, Modernization of railway lines
		Railway construction technology				PO7	Study of the main provisions of technology and mechanization of railway construction, composition of construction works, etc. processes, methods of designing and developing technological processes for the construction of railway roadbed, track laying, track ballasting, construction of contact network supports for electrified sections of the main network. The teaching methods are interactive forms of learning: analysis of specific situations, project method. As part of the discipline, there are field classes in the department's branch and guest lectures by top managers.	Construction materials, Artificial structures on railways, Railway track construction, Track, construction machinery and equipment, Track management Mechanization	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures, Reconstruction of railways, Modernization of railway lines
PD	KV	Organization of construction of transport infrastructure	facilities 180	6	7	PO7	Development of a systematic view of construction processes and types of work, principles of their implementation, requirements for the construction of railway structures, construction of railway organization of work of a working link or team, in compliance with the requirements of safety and environmental protection, fundamental principles of planning, industriality, complex mechanization and automation of production, flow of construction, all seasonality of work.	Construction materials, Artificial structures on railways, Railway track construction, Track, construction machinery and equipment, Track management Mechanization	Modernization of railway lines, Reconstruction of railways, Production practice 2.

		Organization and planning of construction of transport structures				PO7	Studies the use of advanced technologies and organization of construction and installation works that reduce labor, material and labor costs. energy costs in compliance with the requirements of state standards, the order of execution of preparatory, main and final works for the construction of transport facilities and commissioning of facilities, the needs of materials, equipment, labor, and completion dates. Within the framework of the discipline, the calculation and analytical method is used.	Construction materials, Artificial structures on railways, Railway track construction, Track, construction machinery and equipment, Track management Mechanization	Modernization of railway lines, Reconstruction of railways, Production practice 2.
PD	KV	Modernization of railway lines	180	6	8	PO10	Study of the technical condition of operated railways with the solution of problems to increase the capacity and carrying capacity using new techniques in the context of changes in regulatory requirements and structures of the upper structure of the track, the type of traction, and the modernization of rolling stock for modern operating conditions of the main network. Active learning methods are used-situational tasks, project method, case method. Within the framework of the discipline, visiting classes in project organizations and guest lectures by top managers are provided.	Artificial structures on railways, Surveys and design of railways, Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures	Production practice 2, FINAL CERTIFICATION
		Reconstruction of railways				PO10	Study of the main technical parameters and means of technical equipment, plan and profile of the railway in operation, their reconstruction to comply with building codes and regulations while improving the quality of train speeds, traffic growth, with the choice of a scheme for gradually increasing the capacity of the road based on economic and technical indicators. Active learning methods are used-situational tasks, project method, case method. Within the framework of the discipline, visiting classes in project organizations and guest lectures by top managers are provided.	Artificial structures on railways, Research and design of railways, Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures	Production practice 2, FINAL CERTIFICATION

PD	KV	Managerial economics	90	3	5	PO6	Formation of the conceptual apparatus and development of economic analysis skills using modern models and patterns of economic science, consideration of economic problems and tasks facing the head of the firm. Studying this discipline will allow students to gain and develop knowledge in the field of analytical research of economic, technological and technical parameters of the enterprise, as well as to master the skills of applying special methods of economic justification of management decisions and assessing their consequences.	Engineering mathematics, Fundamentals of economics and entrepreneurship	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures, Modernization of railway lines, Reconstruction of railways
PD	KV	Time management	90	3	5	PO6	Formation of students ' general ideas about the essence and types of time management, principles and methods of time resource management for more successful implementation of professional activities.	Sociology, Cultural Studies, Psychology, Philosophy, Engineering Mathematics.	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures, Modernization of railway lines, Reconstruction of railways
PD	KV	Logistics in transport	90	3	6	PO6	Study of the main provisions of transport support for logistics systems, activities in the field of transportation, covering the entire range of operations and services for the delivery of goods from the manufacturer to the consumer, principles of design and construction of logistics systems. Mastering the skills of optimizing and organizing rational cargo flows, their processing in specialized logistics centers, ensuring an increase in their efficiency, reducing unproductive costs and expenses. The training methods are: problem solving, conducting	Fundamentals of economics and entrepreneurship, Fundamentals of computer modeling	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport Modernization of railway lines, Reconstruction of

							thematic colloquiums, brainstorming seminars. The discipline includes guest lectures by leading specialists of transport and logistics companies		railways
PD	KV	Digital diagnostics of transport structures	90	3	6	PO6	Study of digital information processing systems, basic functional nodes, principles Information and communication technologies	, Engineering mathematics, Applied physics, Fundamentals of computer modeling	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport Modernization of railway lines, Reconstruction of railways
PD	KV	Resource saving in transport	90	3	7	PO6	Study of the main types and methods of construction of transport infrastructure facilities. characteristics of energy resources, regulatory support for energy saving, 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 saving management. It is used to solve problems, conduct thematic colloquiums, debates. Guest lectures are held by leading experts of the transport and communication industry	Ecology and life safety, Research methods, Fundamentals of law and anti-corruption culture, Fundamentals of Economics and Entrepreneurship	Modernization of railway lines, Reconstruction of railways
		Business analyst Power BI				PO6	Teaches you how to create interactive visualizations of data obtained from various sources and provide them to employees of this organization, get valuable insights when making strategic decisions, analyze historical and current data, present results in intuitive visual formats providing general access to business-critical analytical information using Power BI	Information and Communication Technologies, Fundamentals of Economics and Entrepreneurship, Engineering Mathematics, Fundamentals of computer modeling	Modernization of railway lines, Reconstruction of railways
Total			2580	86					

10. EXPERT OPINIONS

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу «6В07323– Строительство железных дорог, путь и путевое хозяйство»

Реализация образовательной программы «6В07323– Строительство железных дорог, путь и путевое хозяйство» 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 железнодорожной отрасли. Образовательные траектории разработаны в соответствии с запросами для транспортно-коммуникационной отрасли.

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 «6В07323– Строительство железных дорог, путь и путевое хозяйство» по направлению подготовки кадров «6В073 Архитектура и строительство», полностью соответствует требованиям ГОСО, имеет четкую последовательность при разработке, отвечает современным запросам рынка труда.

Эксперт
Начальник отдела пути филиала
АО «НК» «КТЖ», «Алматинское отделение
магистральной сети»



Нурболат Р.В

личная подпись, дата М.П.

11. REVIEWER'S CONCLUSION

Рецензия

на образовательную программу

«6В07323– Строительство железных дорог, путь и путевое хозяйство»

Образовательная программа бакалавриата «6В07323– Строительство железных дорог, путь и путевое хозяйство» 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 (Изыскания и проектирование железных дорог, Устройство железнодорожного пути, Технология строительства железных дорог, Технологии ремонтов железнодорожного пути, Модернизация железнодорожных линий).

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

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

Образовательная программа предусматривает профессионально-практическую подготовку 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 «6В074 – «Градостроительство, строительные работы и гражданское строительство»

Рецензент ассоц.профессор
КазНТУ им.К.И.Сатпаева



Джолдасова К.К.

12. LETTERS OF RECOMMENDATION

РЕКОМЕНДАТЕЛЬНОЕ ПИСЬМО

от работодателя филиала АО «НК» «КТЖ» - «Алматинское
отделение магистральной сети»

Уважаемая Салтанат Нурадиловна

Руководство филиала АО «НК» «КТЖ» - «Алматинское отделение магистральной сети» в лице Жексенбиева А.Т. ознакомился с содержанием образовательной программы «6В07323– Строительство железных дорог, путь и путевое хозяйство» - включить в содержание образовательной программы дисциплину: «Мосты и тоннели на железных дорогах».

- 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:

1.Соединения и пересечения железнодорожных путей, 2.Технология и механизация технического обслуживания железнодорожного пути, 3.Организация и планирование технического обслуживания железнодорожного пути

- увеличить количество часов, выделяемых на проведение производственных практик;

включить дисциплины:

- Соединения и пересечения железнодорожных путей
- Технология и механизация технического обслуживания железнодорожного пути
- Организация и планирование технического обслуживания железнодорожного пути

Директор филиала АО «НК» «КТЖ» -
«Алматинское отделение магистральной сети»



Жексенбиев А.Т.
(личная подпись, дата, МП)

13. REVIEW AND APPROVAL PROTOCOLS

**ПРОТОКОЛ №6 (начало формирования ОП)
Заседания
Академического комитета по образовательной программе и ведущих
преподавателей кафедры «Строительная инженерия»**

г. Алматы

«_15_»__03__2023 года

Председатель: Исмагулова С.О.

Секретарь: Жадраев Р.Ж.

Присутствовали: члены Академического комитета, ведущие ППС кафедры
Представители с производства:

Обучающиеся: Канназарова А

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. предложил 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: Директор филиала АО «НК» «КТЖ» - «Алматинское отделение магистральной сети» - Жексенбиев А.Т., который предложил в силу специфики их организации отразить в объектах профессиональной деятельности следующее: Современные инновационные технологии в транспортно-коммуникационной сфере.

ВЫСТУПИЛ:

Член кафедры Хасенов С.С., 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 Начальник отдела пути филиала АО «НК» «КТЖ» - «Алматинское отделение магистральной сети» - Нурболат Р.В.

Организации заинтересованы в специалистах, имеющих хороший уровень подготовки и знаний в области проектирования и строительство железных дорог. Вносим предложения о внесении в РУП следующих востребованных дисциплин: Соединения и пересечения железнодорожных путей, Технология и механизация технического обслуживания железнодорожного пути, Организация и планирование технического обслуживания железнодорожного пути

ВЫСТУПИЛ: обучающийся Канназарова А.

Считаем необходимым включить в РУП следующие дисциплины: Соединения и пересечения железнодорожных путей , Технология и механизация технического обслуживания железнодорожного пути, Организация и планирование технического обслуживания железнодорожного пути

ПОСТАНОВИЛИ:

1. Информацию принять к сведению;
2. Учесть предложения и рекомендации работодателей и обучающихся;

3. Рассмотреть включение в РУП следующие дисциплины: Соединения и пересечения железнодорожных путей, Технология и механизация технического обслуживания железнодорожного пути, Организация и планирование технического обслуживания железнодорожного пути

Председатель:



Исмагулова С.О.

Секретарь:



Жадраев Р.Ж.

Академия логистики и транспорта
ПРОТОКОЛ №7 (перед утверждением ОП на УС)

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: Директор филиала АО «НК» «КТЖ» - «Алматинское отделение магистральной сети» - Жексенбиев А.Т, начальник отдела пути - Нурболат Р.В.

Обучающиеся: Канназарова А

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. представил (а) 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 6В07323-Строительство железных дорог, путь и путевое хозяйство 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

Чигамбаев Т.О.

Секретарь

Утепова А.

14. APPROVAL SHEET**14. ЛИСТ СОГЛАСОВАНИЯ**

№	Ф.И.О.	Место работы/учебы	Должность	Дата согласования	Подпись
1	Мамагулова С.С.	АДТ	зав. кадр. АД	30.03.23	<i>[Signature]</i>
2	Исмаилов Т.С.	АДТ	зав. кадр. АД	30.03.23	<i>[Signature]</i>
3	Султанова Ф.М.	АДТ	зав. кадр. АД	30.03.23	<i>[Signature]</i>
4	Ибрагимов Б.Т.	АДТ	зав. кадр. АД	30.05.2023	<i>[Signature]</i>
5	Султанова А.П.	АДТ	зав. кадр. АД	30.03.2023	<i>[Signature]</i>
6	Хасанова Д.Т.	АДТ	зав. кадр. АД	30.03.2023	<i>[Signature]</i>
7	Ибрагимов Б.Т.	АДТ	зав. кадр. АД	30.05.2023	<i>[Signature]</i>

15. CHANGE REGISTRATION SHEET

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