JSC "ALT University named after Mukhamedzhan Tynyshpaev "

APPROVE
USAU T decision dated
"25" 20 (Protocol №8)
President-Rector
Amirgaliyeva S.N.

EDUCATIONAL PROGRAM

NAME: "6B07128– RAILWAY TRACK AND TRACK FACILITIES"

LEVEL OF TRAINING: BACHELOR'S DEGREE

CODE AND CLASSIFICATION OF TRAINING AREAS: 6B071-ENGINEERING AND ENGINEERING

CODE AND GROUP OF EDUCATIONAL PROGRAMS: B165 – BACKBONE NETWORKS AND INFRASTRUCTURE

DATE OF REGISTRATION IN THE REGISTRY: 09.06.2021
DATE OF UPDATE IN THE REGISTRY: 24.04.2024
REGISTRATION NUMBER: 6B07100352

Almaty, 2024

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

1 DEVELOPED :

Candidate of Technical Sciences,Assistant Professor	*Karibaeva G. B.*
Director of the branch of JSC " NC "" KTZ " - "Almaty branch of the backbone network"	*Zheksenbiev A. T.*
Master of industrial training. Almaty distance of the way-PCH-46	*Anauarbekov N. N.*
Assistant Professor	*_Ismagulova S. O.*
Associate Professor	*Ibraimov A. K.*
Student gr. ZHPPH-21-1p	Kannazarova A.

2. EXPERTS:

Head of the VET department of the branch of JSC "НК "KTZ""Specializir" Specialized bridge detachment"	*Zhantleuova A. T.*
Directorof GEO TRACK LLP"»	*Nusupov D. K.*

3 REVIEWERS:

Associate Professor of the Department of "SiSM" Satpayev University	*Dzholdasova K.K.*
Head of the Train Safety Department of the National Railway Service-7	*Nurgozhaev M. B.*

4 REVIEWED AND RECOMMENDED:

Meeting of the AK of the SI Department *Protocol №2 «23»04 2024y*	*(signature)*	*Kulmanov K.S.*
Meeting of the KOC-UMB "ITI" *Protocol №7a, «23»04 2024y*	*(signature)*	*Abdreshov S.A.*
UMC meeting *Protocol №4a, «24»04 2024y*	*(signature)*	*Zharmagambetova M.S.*

5 APPROVED by the decision of the Academic Council of "25".04. 2024. №_8_
6 UPDATED 04.24.2024y.

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 12августа 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: "Designer of digital doubles"

Passport of the educational program

№	Field name	Note
1	Registration Number	6B07100352
2	Code and classification of educational	areas 6B07 Engineering, manufacturing and construction industries
3	Code and classification of training	areas 6B071 Engineering and Engineering
4	Code and group of educational programs	B165 Backbone networks and infrastructure
5	Name of the educational program	6B07128 - Railway track and track management
6	Type of OP	New
7	goal of OP	Training of qualified and competitive specialists who possess the theoretical and practical skills necessary for the implementation of professional activities in the operation of the railway track
8	ISCED	Level
9	6 NRC	6
10	Level 6 ORC	Level 6
11	Distinctive features of the OP	No
	Partner University (SOP)	-
	Partner University(DDOP)	-
12	Form of study	Full-time, full-time with translation into the
13	official Language of instruction	Kazakh, Russian
14	Amount of credits	240
15	Academic degree awarded	Bachelor of Engineering and Technology in the educational program "6B07128-Railway track and track management"
16	Availability of an appendix to the license for the direction of personnel training	KZ12LAA00025205 (005)
17	Availability of OP accreditation	Available
	Name of the accreditation body	NAAR
	Accreditation period	11.06.2021-10.06.2026

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 technicaland 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- Calculate tasks of an economic, technological nature and critical thinking for a construction company with orientation in any economic situations and the development of models of economic analysis, with an understanding of the essence and types of time management for data collection, in order to design interactive dashboards and multidimensional MDX factors and algorithms for projects in various areas of BI technology.

PO2 - To justify the reconstruction (modernization) of the main and station tracks with the planned growth of the transportation process, knowing the modern structure of the railway track according to the speed and load capacity and the switch economy of the station tracks, according to their purpose.

PO3 – 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 the further use of artificial intelligence in the design of transport infrastructure facilities

RO4 - 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.

RO5 - Choose building materials according to properties, conditions of use and purpose, granulometric composition and chemical properties for the design of durable, stable building structures with a long service life in transit and on ISSO, taking into account geological conditions and soil mechanics for a reliable foundation and foundations.

PO6- Plan the construction of transport infrastructure facilities using technologies for new and reconstruction of existing railways using modern methods.

RO7 - Develop surveys and design of railways using various methods of research and development in compliance with the basics of law and the exclusion of corruption matching and

the main provisions of transport logistics systems, with the preparation of documents in the state, Russian, English (at the request of the customer)

RO8- 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

RO9 - Demonstrate knowledge of mathematical and physical methods, measurement of electrical quantities during the operation of transport infrastructure facilities.

PO10- Classify track construction machines and mechanisms for performing the necessary type and volume of track work with mechanized and mechanized maintenance of the track, to increase productivity and quality of work, followed by the consolidation of skills for the period of practice in the enterprises of the track economy.

RO11 - To predict the spiritual, moral and physical achievements of a person for setting and solving problems arising during repairs of the backbone network, using the ability to work in a team, team management and socio-psychological factors aimed at personal achievements of a person.

Area ofprofessional 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 нагруженияof 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 developmentй 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	eof conomicand entrepreneurship	5	+										
15	Engineering mathematics 1	6									+		
16	Engineering mathematics 2	6									+		
17	Applied physics 1	4									+		
18	Applied physics 2	5									+		
19	Building materials	6					+						
20	Engineering geodesy	6			+								
21	building Construction	6					+						
22	occupational safety	6				+							
23	Electrical engineering and electronics basics	6									+		
24	Computer and engineering modeling	6			+								
25	foundations of artificial intelligence	3			+								
26	Educational practice (gEOdieticheskaya)	2			+								
27	Theoretical mechanics	6								+			
28	Engineering mechanics 1	6								+			
29	strength of materials	6								+			
30	Engineering mechanics 2	6								+			
31	structural mechanics	6								+			
32	Engineering mechanics 3	6								+			
33	the fundamentals of design of transport facilities	6			+								
34	introduction to the design of transport infrastructure	6			+								
35	Geology,soil mechanics, foundations	6					+						
36	the Basics of Geoinformatics	6			+								
37	Travel, construction machinery and equipment	6			+							+	
38	Mechanization of track facilities	6										+	
39	Artificial structures on the	9					+						

	Railways												
40	Device rail journey	9		+						+			
41	Turnouts and deaf crossing	6										+	
42	Survey and design of Railways	9							+				
43	Technology repairs railway track	9										+	+
44	organization of the maintenance of the railway track	9					+					+	
45	Production practice 1	3								+			
46	Industrial practice 2	4								+			
47	Railway construction technology	6						++				+	
48	Railway construction technology	6						++				+	
49	Organization of construction of transport infrastructure	facilities 6				++		+					
50	Organization and planning of construction of transport structures	6				++		+					
51	Modernization of railway lines	6			++		+						
52	Reconstruction of railways	6	++		+								
53	Managerial economics	3	+										
54	Time management	3	++									+	
55	Fundamentals financial Literacy	3	+										
56	Critical Thinking	3	+										
57	Minor Program 1	3	+		+				+				
58	Minor program 1	3	+		+				+				
59	Minor program 1	3	+		+				+				
60	FINAL CERTIFICATION	8	+	+	+	+	+	+	+	+	+	+	+

6. STRUCTURE OF THE BACHELOR'S DEGREE PROGRAM

№	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 (DB, 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 "ALT University named after Mukhametzhan Tynyshpayev"

SYLLABUS

The form of education: full-time

Direction of training:
6B071 – Engineering and engineering

Duration of study: 4 years

Group of educational programs:
B165 – Backbone networks and infrastructure

Name of educational program:
6B07128 – Railway track and track facilities

Admission: 2024 year

Degree: *bachelor of engineering and technology*

APPROVED
By decision of the Academic Council of ALT
dated February 29, 2024. Protocol No. 6
Re-approved due to transition
to the status of "ALT University named after
Mukhametzhan Tynyshpayev"
dated april 25, 2024. Protocol No. 8
Chairman of the Academic Council
_____ S.N. Amirgalieva

№	Discipline code	Name of cycles and disciplines	Total labor intensity		Control form, semester		Volume of teaching load, contact hours						Distribution by semester									Assigned to the department
								Classroom			IWS		1 course		2 course		3 course		4 course			
			in academic hours	in academic credits	Exam	CP	Total hours	lectures	practical	laboratory	IWST	IWS	1 sem.	2 sem.	3 sem.	4 sem.	5 sem.	6 sem.	7 sem.	8 sem.	9 sem.	
													15 weeks	15 weeks	15 weeks	15 weeks	15 weeks	15 weeks	15 weeks	7 weeks	8 weeks	
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 DISCIPLINES (GED):																				
1.1.	Required component:		1530	51	13		1530	120	358	15	120	917	10	17	6	11	2	5	0	0	0	
M1		Module of general educational competencies																				
1.1.1.	23-0-B-OK-IK	History of Kazakhstan	180	6	2		180	30	15		8	97		6								SHDPnE
1.1.2.	23-0-B-OK-Fil	Philosophy	180	6	6		180	30	15		8	97						6				SHDPnE
1.1.3.	23-0-B-OK-FK	Physical Culture	240	8	2,3,4,5		240		88		32	120		2	2	2	2					SHDPnE
M2		Language competence module																				
1.1.4.	23-0-B-OK-IYa	Foreign language	300	10	1,2		300		90		16	194	5	5								LT
1.1.5.	23-0-B-OK-KURIYa	Kazakh (Russian) language	300	10	1,2		300		90		16	194	5	5								LT
M3		Module of socio-political competencies																				
1.1.6.	23-0-B-OK-Sots	Sociology	240	8	3,4		240	7	15		8	30			4							SHDPnE
	23-0-B-OK-Kul	Cultural studies						8	15		8	29										SHDPnE
	23-0-B-OK-Pol	Political science						7	15		8	30				4						SHDPnE
	23-0-B-OK-Psi	Psychology						8	15		8	29										SHDPnE
M4		Information technology and artificial intelligence module																				
1.1.7.	23-0-B-OK-IKT	Information and communication technologies	150	5	4		150	30		15	8	97				5						ICT
1.2.	Component of choice:		150	5	1		150	30	15	0	8	97	0	0	0	0	5	0	0	0	0	
M5		Life skills module																				
1.2.1.	23-0-B-KV-EBGD	Ecology and life safety	150	5	5		150	30	15		8	97					5					MVLS
	23-0-B-KV-MNI	Scientific research methods																				SHDPnE
	24-0-KV-EPD	Economics and business activities																				LMT
	23-0-KV-OPAK	Basics of law and anti-corruption culture																				SHDPnE
	TOTAL for the GED cycle:		1680	56	14		1680	150	373	15	128	1014	10	17	6	11	7	5	0	0	0	
2.		CYCLE OF BASIC DISCIPLINES (BD):																				
2.1.	University component:		1860	62	12		1860	270	240	90	132	1068	16	11	6	14	3	6	6	0	0	
M6		Module of natural science competencies																				
2.1.1.	24-0-B-VK-IM1	Engineering Mathematics 1	180	6	1		180	30	30		12	108	6									GE
2.1.2.	24-0-B-VK-IM2	Engineering Mathematics 2	180	6	2		180	30	30		12	108		6								GE
2.1.3.	24-0-B-VK-FF1	Applied Physics 1	120	4	1		120	15	15	15	12	63	4									GE
2.1.4.	24-0-B-VK-FF2	Applied Physics 2	150	5	2		150	15	15	15	12	93		5								GE
M7		Professional module																				
2.1.5.	23-0-B-VK-StrMat	Building materials	180	6	3		180	30	15	15	12	108			6							CE
2.1.6.	23-0-B-VK-Igeod	Engineering geodesy	180	6	4		180	30	15	15	12	108				6						CE
2.1.7.	23-0-B-VK-SK	Building structures	180	6	6		180	30	30		12	108						6				CE
2.1.8.	23-0-B-VK-EOE	Electrical engineering and the basics of electronics	180	6	4		180	30	15	15	12	108				6						E
2.1.9.	23-0-B-VK-OT	Labor protection	180	6	7		180	30	15	15	12	108							6			MVLS
M4		Information technology and artificial intelligence module																				
2.1.10.	24-0-B-VK-KIM	Computer and engineering modeling	180	6	1		180	30	30		12	108	6									ICT, CE
2.1.11.	24-0-B-VK-OI	The basics of artificial intelligence	90	3	5		90		30		12	48					3					ICT
M8		Practice-oriented module																				
2.1.12.	23-0-VK-UPr(s)	Educational practice (geodesic)	60	2	4		60									2						CE
2.2.	Component of choice:		1260	42	8		1260	180	195	45	96	864	0	6	12	6	9	9	0	0	0	
M6		Module of natural science competencies																				
2.2.1.	23-0-B-VK/KV-TMeh	Theoretical mechanics	180	6	3		180	30	30		12	108			6							CE
	23-0-B-KV-Meh1	Engineering Mechanics 1																				
2.2.2.	23-0-B-KV-SMat	Resistance of materials	180	6	4		180	15	30	15	12	108				6						CE
	23-0-B-KV-Meh2	Engineering Mechanics 2																				
2.2.3.	23-0-B-KV-SMeh	Construction mechanics	180	6	5		180	30	30		12	108					6					CE
	23-0-B-KV-Meh3	Engineering Mechanics 3																				

M7	Professional module																								
2.2.4.	23-0-B-KV-OPTS	Fundamentals of design of transport facilities	180	6	2		180	15	15	30	12	108		6									CE
	23-0-B-KV-VPOTIs	Introduction to the design of transport infrastructure facilities																					
2.2.5.	23-0-B-KV-GMOOF	Geology, soil mechanics, foundations and foundations	180	6	3		180	30	30		12	108			6								CE
	23-0-B-KV-OGI	Fundamentals of geoinformatics																					
2.2.6.	23-23/28-B-KV-PSMO	Track, construction machinery and equipment	180	6	6		180	30	30		12	108						6					MVLS
	23-23/28-B-KV-MPH	Mechanization of the track economy																					
M9	Module of economic and managerial competencies																						
2.2.7.	23-0-B-KV-UE	Managerial Economics	90	3	6		90	15	15		12	108						3					LMT
	23-0-B-KV-T-M	Time - management																					
2.2.8.	24-0-B-KV-OFG	Fundamentals of financial literacy	90	3	5		90	15	15		12	108					3						LMT
	24-0-B-KV-KM	Critical thinking																					
	TOTAL for the BD cycle:		3120	104	20	0	3120	450	435	135	228	1932	16	17	18	20	12	15	6	0	0		
3.	CYCLE OF MAIN DISCIPLINES (MD)																						
3.1.	University component:		1380	46	8		1380	195	195	0	72	708	0	0	0	0	8	15	12	9	4		
M7	Professional module																						
3.1.1.	23-28-B-VK-UZhP	Construction of a railway track	180	6	5		180	30	30		12	108					6						CE
3.1.2.	23-28-B-VK-SPGP	Switches and blind intersections	180	6	6		180	30	30		12	108						6					CE
3.1.3.	23-28-B-VK-ISZhD	Artificial structures on railways	180	6	7		180	30	30		12	108							6				CE
3.1.4.	23-23/28-B-VK-IPZhD	Railway surveys and design	180	6	6		180	30	30		12	108						6					CE
3.1.5.	23-28-B-VK-TRZhP	Railway track repair technology	180	6	7		180	30	30		12	108							6				CE
M8	Practice-oriented module																						
3.1.6.	23-28-B-VK-OTSZhP	Organization of current maintenance of the railway track	270	9	8		270	45	45		12	168								9			CE
3.1.7.	23-0-B-VK-PPr1	Industrial practice 1	90	3	6		90											3					CE
3.1.8.	23-0-B-VK-PPr2	Industrial practice 2	120	4	9		120															4	CE
3.2.	Component of choice:		810	27	6		810	135	135	0	72	468	0	0	3	3	0	0	15	6	0		
M7	Professional module																						
3.2.1.	23-23/28-B-KV-TZhDS	Railway building technology	180	6	7		180	30	30		12	108							6				CE
	23-23/28-B-KV-TSZhD	Railway construction technology																					
3.2.2.	23-23/28-B-KV-RZhD	Reconstruction of railways	180	6	7		180	30	30		12	108							6				CE
	23-23/28-B-KV-MZhdL	Modernization of railway lines																					
M8	Practice-oriented module																						
3.2.3.	23-0-B-KV-OPSTS	Organization and planning of the construction of transport facilities	180	6	8		180	30	30		12	108								6			CE
	23-0-B-KV-OSOTIs	Organization of construction of transport infrastructure facilities																					
	Minor program module																						
3.2.4.	24-0-B-MN1	Minor program 1	90	3	3		90	15	15		12	48			3								
3.2.5.	24-0-B-MN2	Minor program 2	90	3	4		90	15	15		12	48				3							
3.2.6.	23-0-B-MN3	Minor program 3	90	3	7		90	15	15		12	48							3				
	TOTAL for the MD cycle:		2190	73	14	0	2190	330	330	0	144	1176	0	0	3	3	6	15	27	15	4		
	TOTAL FOR THE THEORETICAL TRAINING COURSE (TTC):		6990	233	48	0	6990	930	1138	150	500	4122	26	34	27	34	25	35	33	15	4		
4.	23-0-B-VK-IA	FINAL EXAMINATION	240	8																	8	CE	
	TOTAL FOR THE ENTIRE TRAINING		7230	241									26	34	27	34	25	35	33	15	12		
5.	ADDITIONAL TYPES OF TRAINING (ATT):																						
5.1.	24-0-B-DVO-SO	Service to Society	30	1	1		30		10		8	12	1										

AGREED:

Vice-Rector for AA _____ Zharmagambetova M.S.

Director of DAPQ _____ Lipskaya M.A.

DEVELOPED:

Director of the Institute "TE" _____ Abdreshov Sh.A.

Head of the department "CE" _____ Kulmanov K.S.

8. CATALOG OF UNIVERSITY COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM **6B07128-Railway track and track management**

Level of education: Bachelor **Duration of study: 4 years** **Year of admission: 2024years**

Cycle	Component	Name of the discipline	Total labor		intensity Semester	Learning outcomes	Brief description	of the discipline	Prerequisites
			academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10
BD	VK	Engineering Mathematics1	180	6	1	PO1	Discipline studies the basic concepts of higher mathematics and its applications. The aim of the course is to master the mathematical apparatus for solving theoretical and applied problems of a particular profile, to gain an understanding of mathematical modeling and interpretation of the obtained solutions. The course sections include elements of linear algebra and analytical geometry, introduction to mathematical analysis, differential calculus functions of one and several variables	Basic school knowledge in mathematics	Applied Physics
BD	VK	Engineering mathematics 2	180	6	2	PO1	Formation of students ' mathematical knowledge and skills necessary for studying related natural science disciplines, professional cycle disciplines, etc. skills of mathematical modeling and research in professional activities. The course sections include integral calculus of functions of one and several variables, ordinary differential equations, and series theory. Special attention is paid to the application of mathematical methods for solving engineering problems.	Engineering Mathematics 1	Theoretical Mechanics, Engineering Mechanics
BD	VK	Applied Physics1	120	4	1	PO1	The discipline studies the simplest, as well as the most general laws of natural phenomena, the properties and structure of matter, and the laws of its motion. The course covers kinematics, basic equations of dynamics, equations of motion, limits of applicability of classical mechanics, stable time, instant of time and energy, static physics and thermodynamics, electricity and magnetism.	Basic school knowledge in mathematics	Engineering mathematics, Fundamentals of computer modeling.

BD	VK	Applied Physics2	150	5	1	PO1	The discipline studies the phenomena of electromagnetic induction, electromagnetic vibrations and waves, the laws of optics, the basic principles of quantummechanics, physics and elements of atomic nucleus physics. The structure of atomic nuclei. Nuclear forces. Patterns of alpha-beta and gamma radiation. The course reflects the current state of modern physics and combines macroscopic and microscopic approaches.	Applied Physics 1	Theoretical Mechanics, Engineering mechanics
BD	VK	Fundamentals of artificial intelligence	90	3	5	PO5	discipline introduces students to the basic concepts, methods and applications of artificial intelligence. The aim of the course is to provide students with basic knowledge about the capabilities and applications of artificial intelligence in the modern world and their significance for various fields of activity.	KComputerand engineering modeling	Design of artificial structures in transport.
BD	VK	Building materials	180	6	3	PO9	Apply modern building materials, demonstrate the main quality indicators, modern methods of production of building materials for the transport industry, the main patterns and dependencies on physical and mechanical properties, production technology and formation conditions, development methods, development of technological processes of construction production, production of building materials, products and structures on artificial structures under construction.	Engineering mathematics 1,2.	Engineering geodesy. Building structures.
BD	VK	Engineering Geodesy	180	6	4	PO4	Forms professional competencies that determine the bachelor's readiness and ability to use basic knowledge in the field of geodesy, allows you to make geodetic measurements related to solving typical construction tasks, detailed breakdown of structures, control the geometric shapes of the structure being built, perform executive surveys of the results of individual stages of construction and installation works, gives skills in applying basic geodetic instruments to specific production environments.	Building materials. Engineering Mathematics	and Building Structures. Labor protection.
BD	VK	Building structures	180	6	6	PO3	Develops basic knowledge of shaping, calculation and construction of load-bearing structures, the ability to	Engineering Mathematics1,2,	Engineering Mechanics, Labor

							choose the right materials, cross-section shape, design scheme of the structure, based on the purpose and purpose of operation, develop structural solutions for newly erected or reinforced transport structures, master the skills of calculating structural elements according to the limit states that ensure compliance with required indicators of reliability, efficiency, and efficiency.	Applied Physics1,2	Protection, Switches and blind intersections, Railway track repair technology, Railway construction
BD	VK	Electrical Engineering and fundamentals of electronics	180	6	4	PO9	The discipline examines electrical circuits of direct, alternating and three-phase currents, the principle of operation and purpose of transformers and electrical machines, methods for measuring electrical quantities, application and general operating rules of semiconductor devices and circuits. Training methods - analysis of specific situational problems, group discussions.	Engineering mathematica1, 2, Applied physica1, 2	Engineering mechanics, Labor protection, Railway track repair technology, Railway surveys and design, Organization of current maintenance of the railway track
BD	VK	Labor protection	180	6	7	RO3	The discipline deals with the main dangerous and harmful production factors affecting road and railway transport workers, in the process of operating and repairing rolling stock, advanced methods and technical solutions to reduce occupational injuries, improve working conditions and organize workplace safety, methods for organizing and managing labor protection, fire and electrical safety, and basic measures for organizing workplaces. Training methods - analysis of specific situations , group discussions.	Building materials. Engineering geodesy. Building structures.	Maintenance and repair of bridges and pipes.
BD	VK	Educational practice *(geodesic)*	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 Mathematics1, Applied Physics1, Fundamentals of Computer Modeling, Building Materials, Geology, Soil Mechanics, Foundations and foundations.	Production practice 1, Production practice 2.

PD	VK	Artificial structures on railways	180	6	4	RO5	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, machines Interactive methods of teaching the discipline are used to effectively perform various types of repairs and reconstructions and 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 transport structures	design, Railway track construction., Switches and blind intersections, Railway track repair technology, Organization of current railway track maintenance
PD	VK	Railway track	construction 180	6	5	PO2, PO8	Study of requirements for the railway track depending on the classification of railway lines, structural elements of the upper and lower structures of the railway track, working conditions and deformation of the railway track, standards and tolerances for the maintenance of rail track, methods for designing and calculating rail track, cross profiles of the roadbed and methods for calculating the embankment for stability. The training methods are: lecture-press conference, problem solving, conducting thematic call-outs, etc. As part of the discipline, there are 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 Switchbacks and blind intersections, Technology of railway track repairs, Organization of current maintenance of the railway track
PD	VK	Switchbacks and blind intersections	180	6	6	PO2	Study of classifications of connections and intersections of railway tracks, purposes, types and structural elements of single ordinary turnouts railway track junctions and intersections, standards and tolerances for the maintenance of railway track junctions and intersections, design and calculation methods for 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 maintenance of the railway track.

PD	VK	Railway research and design	180	6	7	RO7	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 designing transport structures, Artificial structures on railways	Modernization of railway lines, Reconstruction of railways
PD	VK	Technology of railway track repairs	180	6	7	PO10, PO11	Study of the classification, types, criteria for appointment, frequency and schemes of track repairs, technical conditions for laying and repairing the track, composition and methods of performing track repair works, design techniques for technological processes, etc. processes for the complex of track repair works, purposes and activities of production bases of 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 arrangement, Track, construction machinery and equipment	Organization of the current maintenance of railway puti, Production practice 2
PD	VK	Organization of the current maintenance of the railway track	270	9	8	PO5, PO10	Study of technical, technological and organizational foundations of track management, composition, tasks and the main directions of the organizational structure of the track management, the rules of track management, the main provisions of planning in the track management, methods and means of diagnosing railwayтtraffic, issues of protecting 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.	Artificial structures on railways, Switches and blind intersections, Railway track construction, Railway track repair technology, Track, construction machinery and equipment	Production practice 2, FINAL CERTIFICATION
PD	VK	Production practice 1	90	3	6	RO10	The main tasks of production practice are: consolidation of theoretical knowledge and practical skills in the chosen educational program in the production environment, acquisition of experience in organizational work, obtaining a working specialty, formation of practical skills and competencies in the process of mastering the bachelor's program programs. It is carried	Artificial structures on railways, Railway track	construction Production practice 2

							out in the bases of practices at enterprises in accordance with this educational program.		
PD	VK	Production practice 2	120	4	9	PO10	The purpose of bachelor's degree 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 KVqualification 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 railway tracks, Switches and blind intersections, Technology of railway track repairs, Organization of current railway track maintenance	FINAL CERTIFICATION
		FINAL CERTIFICATION	241	8		PO7, PO10, 11	The objectives of the thesis are to identify the degree of mastering the content of the educational program by the bachelor, check his readiness for independent activity in the direction of the educational program, consolidate and deepen practical skills jobs. It also provides for passing a comprehensive exam.		

9. CATALOG OF ELECTIVE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM **6B07128-Railway track and track management**

Education level: Bachelor **Duration of study: 4 years** **Year of admission: 2024**

Cycle	Component	Name of the discipline	Total labor		intensity Semester	Learning outcomes	Brief description of the discipline	of the discipline	Prerequisites
			academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10 OOD KV
OOD	KV	and life safety	150	5	3	PO4	The discipline studies the main approaches to solving environmental problems, ensuring safe life, sources and types of pollutants construction industry, methods of reducing emissions of harmful substances into the environment, natural and man-made emergencies, their causes, methods of prevention and protection, environmental protection, rescue and other urgent work, rules of behavior of people in extreme conditions	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural studies, Political Science, Psychology	Final certification
		Methods of scientific research				RO7	The discipline provides knowledge and ideas about the content of scientific activity, its methods and forms of knowledge. The theoretical and applied knowledge obtained by students on the methods of scientific research of problems in the field under study, instills in future specialists the skills of cognitive activity in the field of science. Active learning methods - group, scientific discussion, dispute, project method.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural Studies, Political Science, Psychology	Final certification
		Economics and business activity				RO1	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	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Cultural studies, Political	Final attestation

							entrepreneurship, organizational and legal forms of doing business, businessplanning, business secrecy, social responsibility of entrepreneurship.	Science, Psychology	
		Fundamentals of law and anti-corruption culture				RO7	The discipline sets out the fundamental concepts of law, the constitutional structure of state power of the Republic of Kazakhstan, the rights and freedoms of citizens enshrined in the Constitution, the mechanism and protection of legitimate human interests if they are violated. The discipline provides students with an increase in public and individual legal awareness and legal culture, as well as a system of knowledge and civic position on combating corruption as an anti-social phenomenon. Active learning methods - analysis of specific situations, brainstorming.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional Foreign language, Sociology, Cultural Studies, Political Science, Psychology	Final certification
BD	KV	Theoretical mechanics	180	6	3	RO8	Formation of scientific engineering thinking, familiarization with the basic concepts, laws and theorems that allow you to create equations describing the behavior of mechanical systems, the ability to write down a specific phenomenon in mathematical form, the application of basic methods of mechanics in the study of motion and equilibrium of mechanical systems in the study of professional disciplines.	Engineering mathematics, Applied Physics.	Material resistance, Engineering Mechanics 2, Construction Mechanics, Engineering Mechanics 2
		Engineering Mechanics 1				RO8	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.	Engineering mathematics, Applied physics	Material resistance, Engineering Mechanics 2, Construction mechanics, Engineering Mechanics 2
BD	KV	Material resistance	180	6	4	PO8	Formation of fundamental knowledge in the field of calculations of structural elements for strength, rigidity and stability, development of computational and experimental bases and practical methods for calculating structures under the condition of reliability, durability,	Engineering mechanics 1, Geology and soil mechanics,	Construction mechanics, Engineering mechanics 3, Track, construction machinery and

							economy, taking into account the mechanical properties of structural materials and the ability to design according to strength criteria, correctly assessing the limit state, conduct verification and design calculations using modern educational and information technologies.		equipment, Track management Mechanization
		Engineering mechanics 2				RO, 8	Introduce 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, research skills loads, displacements and stress-strain state in 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.	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	PO8	Studies basic methods for calculating structural elements and structures for strength, rigidity and stability, perform calculations of load-bearing elements of transport structures and structures for strength, rigidity, stability and durability, taking into account the time-varying mechanical properties of the materials used, it is necessary to choose the right structural forms and materials that provide the required indicators of reliability, safety and efficiency of both operated and created structures and structures.	Engineering Mathematics, Applied Physics1,2, 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				PO8	Studies the theoretical foundations and methods of calculations for strength, rigidity and stability of structural elements of transport structures, the main types of mechanisms, parts and assemblies of machines, general principles of design and construction, construction models and algorithms for calculating products based on the main performance criteria when evaluating the reliability of operating equipment under operating conditions.	Engineering mathematics1,2, Applied Physics1,2, Engineering mechanics 1,2	Технология Railway construction technology, Railway construction technology, Organization of construction of transport infrastructure facilities, Organization and planning of

									construction of transport structures
BD	KV	Geology, soil mechanics, foundations and foundations	180	6	3	PO5	The discipline studies the basic laws of soil behavior under load, stress-strain theory conditions and their interactions with structures, basic methods for determining foundation sediments, slope and slope stability, morphology, dynamics, and regional features of the upper horizons of the Earth's crust (lithosphere) and their relationship with engineering structures (elements of the technosphere).	Applied Physics 1. Applied Physics 2. Engineering Mathematics 1. Engineering Mathematics 2.	Engineering geodesy
BD	KV	Fundamentals of Geoinformatics				PO3	Studies the history of the development of geoinformation systems (GIS), basic concepts and terms, general issues of geoinformatics, application technologies in the subject areas of professional activity, the current state of GIS technical, software and information support, forms an idea of the features of GIS creation, hardware and software, applied GIS for the development of GIS systems. applications in business, management, science and technology.	Applied Physics 1. Applied Physics 2. Engineering Mathematics 1.Engineering Mathematics 2.	Engineering geodesy
BD	KV	Fundamentals of designing transport structures	180	6	2	PO3	Develops knowledge and skills in using computer-aided design tools for artificial structures using the AutoCAD software package, designing communication routes, basic elements of highways, basic elements of airfields and airports, bridges and transport interchanges, teaches you to work in text editors and spreadsheet editors in the following areas: in order to implement rational design principles for transport structures.	Engineering Mathematics1,2, Applied Physics1,2, Engineering Mechanics 1,2,3	Artificial structures on railways Railway surveys and design, Modernization of railway lines, Reconstruction of railways
		Introduction to the design of transport infrastructure objects				PO3, PO6	Principles and methods of graphic and geometric modeling of engineering problems, general requirements of the ESKD, SPDS and other regulatory documents standards for the execution and design of drawings, modern methods of automating graphic works, the possibility of automated creation of geometric models of spatial objects and drawing. Creating 2D and 3D models in the framework of graphic	Engineering mathematics1,2, Applied Physics1,2, Engineering mechanics 1,2,3	Artificial structures on railways Research and design of railways, Modernization of railway lines, Reconstruction of railways

							systems (Compass 3D, Solidworks). The discipline provides software training, computer modeling and practical analysis of results.		
BD	KV	Track, construction machinery and equipment	180	6	6	RO10	Study of track structures, construction machinery and equipment, their technical capabilities when used for renovation, repair and current maintenance of the upper structure of the track, small artificial structures, during the construction of railways; small-scale mechanization equipment, energy support 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				RO10	Study of designs, theory and calculations of track machines received in the track management of JSC NC " Kazakhstan Temir zholy "" application for repairing and maintaining the roadbed, 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 the rail track, cleaning the track from snow.	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 railway track maintenance, Production practice1, 2
BD	KV	Managerial economics	90	3	6	RO1	Formation of the conceptual framework 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. 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
BD	KV	Time management	90	3	6	RO1	The discipline studies a system of methods, tools and approaches that are aimed at effective time management in order to achieve the tasks set. The course is designed to improve the skills of organizing and optimizing the use of working time, increase productivity, reduce stress, plan, delegate, use tools and technologies, and know your time and energy rhythms in order to use your time effectively.	Economics and entrepreneurship. Fundamentals of financial literacy.	Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures, Modernization of railway lines, Reconstruction of railways
BD	KV	Fundamentals of financial literacy	90	3	5	PO1	Formation of general functional economic and financial literacy, mastering methods and tools of economic and financial calculations for solving practical problems	Engineering mathematics, Applied Physics.	Managerial economics. Time management.
BD	KV	Critical thinking	90	3	5	PO10	The discipline studies forms and techniques of rational cognition, creating a general idea of logical methods and approaches used in the field of professional activity, and developing practical skills of rational and effective thinking.	Engineering Mathematics, Applied Physics.	Managerial economics. Time management.
PD	KV	Railway construction technology	180	6	7	RO10	Study of the regulatory, technical and technological foundations of railway construction, the main 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 and natural-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.	Building 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				RO10	Study of the main provisions of railway	Construction materials,	Organization of

		construction technology					construction technology and mechanization, composition of construction works and processes, methods of design and development of 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.	Artificial structures on railways, Railway track construction, Track, construction machinery and equipment, Track management Mechanization	construction of transport infrastructure facilities, Organization and planning of construction of transport facilities, Reconstruction of railways, Modernization of railway lines
PD	KV	Organization of construction of transport infrastructure	facilities 180	6	8	PO4, PO6	Development of a system view about construction processes and types of work, the principles of their implementation, the requirements for organizing the work of a working link or team, in compliance with the requirements of safety and environmental protection, the fundamental principles of planning, industriality, complex mechanization and automation of production, the flow of construction, all seasonality of work.	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				RO4, RO6	Studies the use of advanced technologies and organization of construction and installation works that reduce labor costs material and 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	7	PO3, PO5	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, modernization of rolling stock for modern operating conditions of the main network.	Artificial structures on railways, Surveys and design of railways, Organization of construction of transport infrastructure facilities, Organization and planning of construction	Production practice 2, FINAL CERTIFICATION

							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.	of transport structures	
		Reconstruction of railways				RO1, RO3	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 when train speeds increase, traffic increases, and the road capacity is gradually increased 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, Railway surveys and design, Organization of construction of transport infrastructure facilities, Organization and planning of construction of transport structures	Production practice 2, FINAL CERTIFICATION

10. EXPERT OPINIONS

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу: 6307128 - «Железнодорожный путь и путевое хозяйство»
Уровень подготовки: Бакалавриат

Образовательная программа (ОП) по направлению подготовки 6807128 «Железнодорожный путь и путевое хозяйство» реализуемая в Академии логистики и транспорта представляет собой систему учебно-методических документов, регламентирующих цели, ожидаемые результаты, содержание, условия и технологии реализации образовательного процесса, систему оценки качества подготовки выпускника. ОП разработана и утверждена на основе государственного общеобразовательного стандарта высшего образования (ГОСО) по направлению подготовки уровень бакалавриата.

Целью ОП является подготовка выпускника, освоившего комплекс основополагающих компетенций строителя транспортника и способного успешно решать профессиональные задачи, а также способного к развитию общекультурных потребностей, творческих способностей, социальной адаптации, коммуникативности, толерантности, способности к диалогу. настойчивости в достижении цели, умению работать в команде, лидерских качеств.

ОП создана в соответствии с потребностями Республиканского рынка труда в кадрах с высшим образованием. Выбор видов деятельности Академии обусловлен профилем подготовки, а также потребностями заинтересованных работодателей в лице КТЖ и др. Железнодорожный транспорт демонстрирует динамичное развитие, поэтому актуальной проблемой в настоящий момент для отраслевого рынка является недостаточное количество и качество квалифицированных специалистов.

На основании проведенной экспертизы можно сделать следующие выводы:
представленная к рассмотрению ОП соответствует квалификационным требованиям ГОСО РК.

- структурные элементы ОП реализуется с учетом принципов определения целей, содержания и оценки образования.
- в ОП предоставлены аргументы взаимоувязки между компетенциями, результатами обучениями и академическими кредитами.

Эксперт:
Начальник ПТО филиала АО « НК» «КТЖ» «Специализированный мостовой отряд» **Жантлеуова А.Т.**

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу 6B07128 – Железнодорожный путь и путевое хозяйство, группы образовательных программ B165 – Магистральные сети и инфраструктура по направлению подготовки 6B071 – Инженерия и инженерное дело

Образовательная программа 6807128 – Железнодорожный путь и путевое хозяйство в первой редакции утверждена в 2023 году, а в 2024 году переработана с некоторыми изменениями и дополнениями.

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.

Реализация образовательной программы 6807128 – Железнодорожный путь и путевое хозяйство осуществляется посредством последовательности изучаемых дисциплин, с установлением конкретных задач и целевых индикаторов. В образовательной программе четко прослеживается междисциплинарное взаимодействие, которое заключается в комплексной связи между содержанием соответствующих учебных дисциплин, посредством которых достигается внутреннее единство программы подготовки бакалавра техники и технологий в области путевого хозяйства железнодорожного транспорта.

В учебном плане образовательной программы 2024 года 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. Базовые и профилирующие дисциплины учебного плана имеют достаточные объемы кредито-часов и соответствуют спросу производства по подготовке кадров с высшим образованием – бакалавров техники и технологий по образовательной программе 6807128 – Железнодорожный путь и путевое хозяйство.

Таким образом, представленная на экспертизу образовательная программа 6807128 – Железнодорожный путь и путевое хозяйство, группы образовательных программ B165 – Магистральные сети и инфраструктура по направлению подготовки 6B071 – Инженерия и инженерное дело, полностью соответствует требованиям ГОСО, имеет четкую последовательность при разработке, отвечает современным запросам рынка.

Эксперт,
Директор ТОО GeoTrack» **Нусупов Д.К.**

10. REVIEWER'S CONCLUSION

РЕЦЕНЗИЯ

на образовательную программу 6B07128 – Железнодорожный путь и путевое хозяйство, группы образовательных программ B165 – Магистральные сети и инфраструктура по направлению подготовки 6B071 – Инженерия и инженерное дело

Образовательная программа 6807128 – Железнодорожный путь и путевое хозяйство разработана в 2023 году выпускающей кафедрой «Строительная инженерия» АО «Академия логистики и транспорта» на основе Государственного общеобязательного стандарта высшего образования, утвержденного приказом МНВО РК от 20 июля 2022 года № 2. В 2024 году данная образовательная программа переработана с необходимыми изменениями и дополнениями выпускающей кафедрой «Транспортное строительство» АО «ALT университет имени Мухамеджана Тынышпаева».

Образовательная программа включает в себя: сведения о рассмотрении, согласовании и утверждении программы, разработчиках, экспертах и рецензентах; нормативные ссылки; компетентностная модель выпускника; матрица соотнесения результатов обучения по образовательной программе с учебными дисциплинами/модулями; структура образовательной программы бакалавриата; рабочий учебный план на весь срок обучения; каталоги дисциплин вузовского компонента и компонента по выбору.

Структура и содержание учебного плана образовательной программы состоит из общеобразовательных, базовых и профилирующих циклов дисциплин, обеспеченных необходимыми объемами академических кредитов и часов.

Базовые и профилирующие дисциплины учебного плана образовательной программы объединены в соответствующие компетентностные модули.

Содержание образовательной программы соответствует современному уровню развития науки, техники и производства в области ведения путевого хозяйства железнодорожного транспорта.

В целом, рецензируемая образовательная программа 6807128 – Железнодорожный путь и путевое хозяйство, группы образовательных программ B165 – Магистральные сети и инфраструктура по направлению подготовки 6B071 – Инженерия и инженерное дело, отвечает требованиям ГОСО РК и способствует формированию у выпускников общеобразовательных, базовых и профессиональных компетенций в современных рыночных условиях и рекомендуется к использованию в учебном процессе высших учебных заведений Республики Казахстан.

Рецензент,
Начальник отдела по безопасности движении поездов НЖС-7 **Нургожаев М.Б.**

РЕЦЕНЗИЯ

на образовательную программу: 6307128 - «Железнодорожный путь и путевое хозяйство»
Уровень подготовки: Бакалавриат

Образовательная программа - 6307128 - «Железнодорожный путь и путевое хозяйство» разработана с целью подготовки квалифицированных специалистов в области железнодорожного транспорта. Образовательная программа учитывает современные требования и тенденции в данной сфере, а также основывается на государственных стандартах высшего образования.

Образовательная программа содержит:

Компетентностную модель выпускника- определяющую необходимые знания и навыки для успешной работы в сфере железнодорожного транспорта.

Учебный план- который охватывает как теоретические, так и практические аспекты, включая проектирование, эксплуатацию и техническое обслуживание железнодорожного пути

Разнообразие учебных дисциплин, которые обеспечивают глубокое понимание ключевых тем, таких как геодезия, материалы для строительства, управление проектами и экология.

Каталоги дисциплин содержащие подробные описания курсов с указанием пререквизитов и ожидаемых результатов обучения.

Программа охватывает современные технологии и методы, используемые в железнодорожном строительстве, что обеспечивает выпускникам конкурентные преимущества на рынке труда.

Соответствие программы государственным стандартам гарантирует высокое качество подготовки и конкурентоспособность выпускников на рынке труда.

Рекомендуется включение более широкого спектра исследовательских проектов, что позволит студентам развивать критическое мышление и научные навыки.

Рекомендуется расширить содержание программы за счёт тем, связанных с цифровизацией и автоматизацией процессов в железнодорожном транспорте.

Образовательная программа 6307128 - «Железнодорожный путь и путевое хозяйство» имеет высокое качество и соответствует требованиям современного рынка труда. Она обеспечивает всестороннюю подготовку специалистов, готовых к работе в сфере железнодорожного транспорта

К.т.н.,Ассоцированный профессор
кафедры «СиСМ» ,Сатпаев университета **Джолдасова К.К.**

12. Review and approval protocols

ПРОТОКОЛ № 8
Заседания
Академического комитета по образовательной программе и ведущих преподавателей кафедры «Строительная инженерия»

г. Алматы «23» 04 2024 года

Председатель: Кулманов К.С.
Секретарь: Аблязова А.М.
Присутствовали: члены Академического комитета, Исмагулов С.О.,Карибаева Г.Б., Ибраимов А.К., Алимкулов М.М.
Представители с производства: *Директор филиала АО «НК» «КТЖ»-«Алматинское отделение магистральной сети» Жексенбиев А.Т., Мастер производственного обучения, Алматинская дистанция пути-ПЧ-46- Анарбеков Н.Н.*
Обучающиеся: *Студент гр.ЖППХ-21-1п- 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 Кулманов К.С. 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:
Представитель работодателей: Анарбеков Н.Н. 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 с предложением заслушать представителей работодателей и обучающихсяпо включению новых дисциплин в КЭД и РУП приема 2024г.
ВЫСТУПИЛ: представитель работодателей

ВЫСТУПИЛ(а): зав кафедрой с предложением заслушать представителей работодателей и обучающихсяпо включению новых дисциплин в КЭД и РУП приема 2024г.

ВЫСТУПИЛ: представитель работодателей

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

ВЫСТУПИЛ: обучающийся_Канназарова А.

Считаем необходимым включить в РУП следующие дисциплины Изыскание и проектирование железных дорог; Технология железнодородного строительства; Модернизация железных дорог

ПОСТАНОВИЛИ:

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

Рассмотреть включение в РУП следующие дисциплины: Изыскание и проектирование железных дорог; Технология железнодородного строительства; Модернизация железных дорог

Председатель: **Кулманов К.С.**

Секретарь: **Аблязова А.М.**

Заседания КОК УМБ института «Транспортная инженерия»

г. Алматы «23» 04 2024года

Председатель: Абдрешов Ш.А.

Секретарь: Карибаева Г.Б.

Присутствовали: члены КОК УМБ, члены Академического комитета

Представители с производства: *Директор филиала АО «НК» «КТЖ»-«Алматинское отделение магистральной сети» Жексенбиев А.Т., Мастер производственного обучения, Алматинская дистанция пути-ПЧ-46- Анарбеков Н.Н.*

Обучающиеся: *ст.ЖППХ-21-1п- 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 Кулманов К.С. представил 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 6В07128- Железнодорожный 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 **Абрешов Ш.А.**

Секретарь **Карибаева Г.Б.**

13. APPROVAL SHEET

ЛИСТ СОГЛАСОВАНИЯ

№	Ф.И.О.	Место работы/учебы	Должность	Дата согласования	Подпись
1	Кулекешов К.С	каф "АСИ"	зав. каф	23.04.2024	
2	Сухова А.Г	каф. [illegible]	зав. каф	23.04.2024	
3	[illegible] И.Т	каф. АТС и БЖД	и.о. зав. каф	23.04.2024	
4	Калкабаева Г.У	кафедра "LE"	и.о. зав. каф	23.04.2024	
5	[illegible]	А.Г. - кафедра "[illegible]"	[illegible] зав. каф	23.04.2024	
6	[illegible] Д.Т	каф. [illegible]	зав. каф.	23.04.2024	
7	[illegible]	каф. [illegible]	зав. каф	23.04.2024	
8	Ануарбаев Г.К	АЛТ каф ПЕ	зав. каф	23.04.2024	

14. CHANGE REGISTRATION SHEET

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