AGREED Director of Scientific and Innovation
Center "ALMAS" LLP "
Mixing N. Zh

I approve "Transport and construction"
Director of the Institute
Abdreshov Sh.A .
"_19_" __03__ 2025 zh.

CATALOGUE OF DISCIPLINES OF THE UNIVERSITY COMPONENT OF EDUCATIONAL PROGRAM

«6B07177– Oil and gas transportation engineering»

Education level: Bachelor's degree Duration of study: 3 years Admission year: 2025

Cycle	Component	Name of the discipline	Total labor intensity		Term	Learning outcomes academic hours	Brief description of the discipline	Prerequisites	Post-requirements academic hours
			academic hours	academic hours					
1	2	3	4	5	6	7	8	9	10
BD	KV	Engineering mathematics 1	150	5	1	LO 1	Mastering the mathematical apparatus for solving theoretical and applied problems of a specific profile, getting an idea of mathematical modeling and interpretation of the solutions obtained. The course sections include elements of linear algebra and analytical geometry, an introduction to mathematical analysis, and differential calculus of functions of one and several variables.	History of Kazakhstan. Kazakh (Russian) language, Professionally oriented foreign language, Professionally oriented foreign language, Cultural studies, Political Science, Psychology.	Final certification
BD	KV	Engineering mathematics 2	150	5	2	LO 1	The formation of students' mathematical knowledge and skills necessary for the study of related natural science disciplines, disciplines of the professional cycle and 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 to solve engineering problems.	History of Kazakhstan. Kazakh (Russian) language, Professionally oriented foreign language, Professionally oriented foreign language, Cultural studies, Political Science, Psychology.	Final certification
BD	KV	Construction Physics	150	5	2	LO 1	Formation of knowledge, skills and competencies necessary for the development	History of Kazakhstan. Kazakh (Russian)	Final certification

							design and operation of energy-efficient, comfortable and durable buildings and structures. He studies the physical processes and phenomena occurring in building structures and buildings, as well as their interaction with the environment, the basics of construction and architectural acoustics, building climatology, lighting engineering, thermal engineering. The course helps to learn how to minimize the negative impact of external and internal physical factors on buildings.	language, Professionally oriented foreign language, Professionally oriented foreign language, Cultural studies, Political Science, Psychology.	
BD	KV	Construction chemicals	120	4	2	LO 3	The formation of knowledge in the field of building chemistry is associated with the development of science and technology aimed at improving building materials and their application processes. Construction chemistry studies and develops chemical materials, additives and substances that affect the properties of building structures, ensuring their strength, durability, resistance to external influences and energy efficiency. An important part of the course is studying the environmental impact of building chemicals.	Engineering mathematics 1.2, Construction Physics	Innovative building materials, Construction mechanics.
BD	KV	Engineering geodesy	180	6	3	LO 5	It forms professional competencies that determine the bachelor's willingness and ability to use basic knowledge in the field of geodesy, allows for geodetic measurements related to solving typical construction tasks, detailed breakdown of structures, control geometric shapes of structures under construction, perform executive surveys of the results of individual stages of construction and installation work, provides skills in using basic geodetic instruments for specific production conditions.	Engineering mathematics 2. Construction chemicals. Building materials. Basics of Python programming. Resistance of materials. Applied mechanics.	Educational practice (geodetic). Construction mechanics. Mechanics of structural strength.
BD	KV	Building materials	180	6	2	LO 3	The formation of knowledge about building materials consists in obtaining in-depth	Engineering mathematics 1.2, Construction Physics,	Engineering geodesy, Construction

							knowledge about various types of materials, their characteristics and methods of application. This knowledge is necessary in order to choose the materials for construction competently, thereby ensuring the durability, safety, economic efficiency and functionality of the facilities. The course is aimed at familiarizing students with various types of building materials, such as concrete, brick, metal, wood, glass, insulation and finishing materials. An important task is to study their physical and mechanical properties.	Building materials,	structures, Labor protection..
BD	KV	Construction structures	120	4	4	LO 3	Forms the basic knowledge of shaping, calculation and construction of load-bearing structures, the ability to choose the right materials, cross-section shape, design scheme, based on the purpose and purpose of operation, develop design solutions for buildings and structures under construction, master the skills of calculating structural elements according to limiting conditions, ensuring compliance with the required indicators of reliability, efficiency, efficiency. The main purpose of the course is to teach the principles of building structure design. This includes knowledge of the requirements for strength, safety, stability, and cost-effectiveness of design solutions.	Engineering mathematics 1.2, Construction Physics, Engineering geodesy, Building materials Innovative building materials.	Labor protection, Designing of oil and gas pipeline systems, Maintenance and repair of oil and gas pipelines, Maintenance and repair of oil and gas storage facilities, Industrial practice 2.
BD	KV	Occupational safety and health	150	5	8	LO 5	The discipline examines the main dangerous and harmful production factors affecting workers of automobile and railway transport, during the operation and repair of rolling stock, advanced methods and technical solutions to reduce occupational injuries, improve working conditions and workplace safety, ways of organizing and managing occupational safety, fire and electrical safety, the main activities in the organization jobs. Training methods - analysis of specific situations, group discussions..	Resistance of materials, Engineering geodesy, Innovative building materials, Construction structures.	Pipeline transport of oil and gas, Industrial practice 2, Design of oil and gas storage facilities, Minor program 3.
		Engineering graphics and computer modeling	120	4	1	LO 1	To master the basic images of spatial forms on a plane and teach how to work in modern modeling systems in order to develop innovative computer models.He studies spatial	Physical CultureForeign language. Foreign language. Kazakh (Russian) language.	Physical Culture. Foreign language. Kazakh (Russian) language. Engineering mathematics 2. Construction

BD	KV						representation and imagination, constructive geometric thinking based on graphical models of spatial forms, and practical skills in building computer models and applying them to solving real-world problems. An important part of the course is computer modeling training.Students are taught how to use software to create 3D models of objects, analyze their characteristics (for example, strength, dynamics, heat transfer, etc.) and optimize design solutions.	Engineering mathematics 1. Construction Physics.	chemicals. Building materials. Basics of Python programming. Resistance of materials. Applied mechanics.
BD	KV	Basics of Python Programming	90	3	2	LO 1	The discipline consists in developing students' basic knowledge and skills necessary to effectively use Python to solve various programming problems. This includes mastering the syntax and basic constructions of the language, as well as developing the ability to think logically and solve practical problems using programming. The course is aimed at mastering the basic elements of the Python language, such as variables, operators, data structures (lists, tuples, sets, dictionaries), conditional operators, loops, functions, and classes.	Engineering mathematics 1. Construction Physics. Engineering graphics and computer modeling. Theoretical mechanics. Fundamentals of classical mechanics.	Engineering geodesy. Educational practice (geodetic). Construction mechanics. Mechanics of structural strength.
BD	KV	Professionally oriented foreign language	90	3	6	LO 9	A professionally oriented foreign language is based on taking into account the needs of students in learning a foreign language dictated by the specifics of their future profession or specialty. It involves a combination of mastering a professionally oriented foreign language with the development of personal qualities of students, knowledge of the culture of the country of the language being studied and the acquisition of special skills based on professional and linguistic knowledge. The course is aimed at mastering specialized vocabulary and phraseology used in a specific professional field.	Computer and engineering modeling, The basics of artificial intelligence, , Engineering mathematics 1.2, Construction Physics.	Political Science, Labor protection, Designing of oil and gas pipeline systems, Maintenance and repair of oil and gas pipelines, Maintenance and repair of oil and gas storage facilities.
BD	KV	Educational practice (geodetic)	60	2	3	LO 8	The organization of educational practice is aimed at ensuring that bachelors become familiar with the fields of professional activity and training profiles, with the ability to survey the area, forward and reverse, leveling, reference to reference points, removing points	Engineering mathematics 1.2, Construction Physics. Engineering geodesy, Building materials, Innovative building materials.	The basics of artificial intelligence, Labor protection, , Fundamentals of financial literacy.

							and elevations from the map, solving typical engineering and geodetic problems. Trainees are taught how to properly use various types of geodetic equipment to make accurate measurements and surveys. This includes setting up and calibrating instruments, as well as working with software to process the received data.		
BD	KV	Designing of oil and gas pipeline system	150	5	5	LO 5,8	The discipline develops students' knowledge in the field of pipeline system design for distillation of various media, to ensure the safety, efficiency, long-term and cost of oil and gas pipeline systems. Studies the characteristics and calculations of oil and gas pipeline systems (loads and pressures, the need for additional equipment), theoretical and practical issues in the design of various natural and climatic conditions.	Geology and mechanics of soils. Geoinformation systems in geology.Fundamentals of oil and gas business.	Managerial economics. Time management. Design of gas storage facilities. Oil and gas pipelines.
BD	KV	Design of oil storage facilities	150	5	5	LO 5,8	The discipline is aimed at developing students' knowledge and skills necessary to develop engineering solutions that ensure safe and efficient storage of oil and petroleum products. The course examines the principles of designing oil storage facilities, taking into account safety requirements, environmental standards and operational efficiency, which contributes to the training of specialists capable of creating a modern and reliable infrastructure for the storage of petroleum products.	Geology and mechanics of soils. Geoinformation systems in geology.Fundamentals of oil and gas business.	Managerial economics. Time management. Design of gas storage facilities. Oil and gas pipelines.
BD	KV	Design of gas storage facilities	150	5	6	LO 5,8,10	The discipline is aimed at developing students' knowledge in the field of a set of engineering measures that ensure the creation of reliable, safe and cost-effective facilities for storing natural, liquefied and compressed gas. Gas storage facilities are considered as a key element of the energy infrastructure that ensures the stability of gas supply, the regulation of seasonal and daily fluctuations in consumption, as well as the formation of strategic reserves and reserves.	Foundations and foundations. Geotechnics in foundation engineering. Designing of oil and gas pipeline systems. Design of oil storage facilities.	Hydraulics, hydrology, hydrometry. Hydraulic engineering calculations and measurements. Oil and gas storage facilities. Pumping and compressor stations in the oil and gas industry. Fundamentals of reliability of pipeline systems. Machinery and equipment for the construction and repair

									of oil and gas facilities.
BD	KV	Fundamentals of oil and gas business	150	5	4	LO 3,4	Students of the discipline have the skills to know the basics of oil and gas business, search, exploration and development of oil and gas facilities, collection, storage and transportation of hydrocarbons, pumping surface and groundwater, well maintenance and repair, oil and gas geology, well construction, design, development and operation of oil and gas fields forms skills. Students use this data in the design, construction and operation of oil and gas pipelines.	Engineering mathematics 1.2, Construction Physics	Oil and gas pipelines, Oil and gas storage facilities, Pipeline transport of oil and gas, , Designing of oil and gas pipeline systems.
BD	KV	Oil and gas pipelines	150	5	6	LO 10,11	The discipline forms students' knowledge skills for the requirements of oil and gas pipeline structures, the procedure for laying linear pipes and structures, supports for pipelines, the regulations for connecting pipes to each other, the construction of main oil and gas pipelines, methods of hydraulic and technological calculation of the facility for the transfer of oil and gas, pressure characteristics of the pipeline and pumping stations, the specifics of temperature conditions in pipelines.	Fundamentals of oil and gas business, Engineering mathematics 1.2, Construction Physics	Designing of oil and gas pipeline systems, Maintenance and repair of oil and gas pipelines, Maintenance and repair of oil and gas storage facilities, Pumps and compressors
BD	KV	Oil and gas storage facilities	150	5	7	LO 8,10	The discipline studies various rules for storing oil and gas in tanks, preventing product loss during operation, the draft master plan for the construction of oil and gas storage facilities, tank designs, provisions for checking the dimensions of the tank body for stability, measuring and accounting for oil and gas products, laying pipelines for tanks, water pipes for fire extinguishing. Fundamentals of design and construction of various types of oil and gas storage facilities, such as oil and gas storage tanks, underground storage facilities, and others.	Fundamentals of oil and gas business, Oil and gas pipelines, Engineering mathematics 1.2, Construction Physics	Designing of oil and gas pipeline systems, Maintenance and repair of oil and gas pipelines, Maintenance and repair of oil and gas storage facilities, Pumps and compressors, Minor program 1.

BD	KV	Pumping and compressor stations in the oil and gas industry	150	5	7	LO 8,10	The discipline provides students with the knowledge and skills necessary for effective design, operation and maintenance of pumping and compressor stations, as well as understanding their role in the technological processes of oil and gas production, transportation and refining. These systems play a key role in ensuring the stable operation of the entire oil and gas production, ensuring the efficient movement of oil and gas through pipeline systems, as well as providing the necessary pressure and volume for various production processes.	Fundamentals of oil and gas business, Oil and gas pipelines, Oil and gas storage facilities, Designing of oil and gas pipeline systems, Maintenance and repair of oil and gas storage facilities.	Pipeline transport of oil and gas, Industrial practice 2, Design of oil and gas storage facilities, Design of oil and gas storage facilities
BD	KV	Maintenance and repair of oil and gas pipelines	180	6	8	LO 10,11	The discipline provides students with knowledge about the maintenance and repair of oil and gas pipelines, incomplete replacement and (or) restoration of pipeline equipment elements, repair work with linear fittings and equipment, communication and power supply lines, cleaning and anti-corrosion painting of pipeline surfaces, and the full name of technical measures aimed at comprehensive or partial restoration of the linear part of the pipeline. Studies regulatory and technical documentation for the maintenance and repair of oil and gas pipelines, calculation and graphic work.	Fundamentals of oil and gas business, Oil and gas pipelines, Oil and gas storage facilities.	Maintenance and repair of oil and gas pipelines, Pipeline transport of oil and gas, Industrial practice 2, Design of oil and gas storage facilities, Design of oil and gas storage facilities.
BD	KV	Maintenance and repair of oil and gas storage facilities	150	5	9	LO 8,10	The discipline forms the study of modern technologies for the construction of oil and gas structures, methods and technologies for the construction of oil and gas structures, rules for the installation of vertical and horizontal tanks, methods for testing tanks for tightness, installation and dismantling work, rules for checking the operability of devices, mechanisms and equipment, general construction processes for the construction of structures, methods for the construction of structures in accordance with design and regulatory documents.	Fundamentals of oil and gas business, Oil and gas pipelines, , Oil and gas storage facilities,	Maintenance and repair of oil and gas pipelines, Pipeline transport of oil and gas, Industrial practice 2, Design of oil and gas storage facilities, Design of oil and gas storage facilities.

		Industrial practice 1	150	5	6	LO 8	The main objectives of industrial practice are: consolidation of theoretical knowledge and practical skills in the chosen educational program in a production environment, acquisition of experience in organizational work, obtaining a working specialty, development of practical skills and competencies in the process of mastering the bachelor's program. Trainers are given the opportunity to work with the technologies and methods they have learned in theory, which allows them to strengthen their understanding and see how this knowledge is applied in practice.	Fundamentals of oil and gas industry, Oil and gas pipeline, Oil and gas storage facilities.	Oil and gas pipeline transportation, Industrial practice 2, Design of oil and gas storage facilities, Modernization of oil depots and gas holders.
BD	KV	Industrial Internship 2/ Pre-Graduation Internship					This course develops the knowledge and skills necessary for successful preparation for professional work. At this stage of training, students have the opportunity to apply the theoretical knowledge acquired during the course of study in real-world industrial settings. Pre-graduation practice includes preparation for writing a thesis related to real problems and tasks at the enterprise.	Fundamentals of the oil and gas industry, Oil and gas pipeline, Oil and gas storage facilities, Pipeline transportation of oil and gas, Industrial practice 2,	Design of oil and gas storage facilities, Modernization of oil depots and gas holders, Minor program 3.

Head of the Department of Architectural and Construction Engineering, _____ K.S. Kulmanov.