

APPROVED:

Director of LLP "Qazaqplan"



Akesheev A.I.
2023

APPROVED:

Director of the Institute
Transport Engineering



Chigambayev T.O.

«30» 03 2023

CATALOG OF DISCIPLINES OF THE COMPONENT BY CHOICE

EDUCATIONAL PROGRAM

6B07329 – Construction of industrial and civil structures

Education level: Bachelor's degree Duration of study: 4 year Year of admission: 2023

Module	Cycle	Component	Name of the discipline	Total labor intensity		Term	Learning outcomes	Brief description of the discipline	Prerequisites	Post-requisites	Post requirements Department
				academic hours	academic credits						
1	2	3	4	5	6	7	8	9	10	11	12
Module 1- Natural Sciences	GED	KV	Ecology and life safety	150	5	3	ON5	Study of basic environmental concepts, environmental problems and approaches to their solution, sources and types of environmental pollution by enterprises, principles of standardization of air and water quality, basic provisions of legislation in various fields, natural and man-made emergencies, their causes, methods of prevention and protection.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Culturology, Political science, Psychology	final examination	ATS BGD

disciplines			Scientific Research Methods				ON 9, ON 11	Students obtain theoretical and applied knowledge on methods of scientific research of problems in the field of study, train specialists with skills of cognitive activity in the field of science, formulate deep ideas about the content of scientific activity, its methods and forms of knowledge.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Culturology, Political science, Psychology	final examination	SRS IFV
the SRSIFV Module 2- Withsocial and political knowledge			Fundamentals of Economics and Entrepreneurship				ON 6	Formation of analytical thinking skills on economic issues, the ability to independently draw conclusions based on the material being studied, navigate in any economic situations, apply theoretical economic knowledge in practical activities, realize one's abilities, both personally and professionally.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Culturology, Political science, Psychology	final examination	LMT
			Fundamentals of law and anti-corruption culture				ON 9, ON 11	Increasing public and individual legal awareness and legal culture of students, as well as the formation of a system of knowledge and civic position to combat corruption as an antisocial phenomenon. As a result of studying the course, students must master the fundamental concepts of law, the constitutional structure of state power of the Republic of Kazakhstan, the rights and freedoms of citizens enshrined in the Constitution, the mechanism and protection of legitimate human interests in the event of their violation.	History of Kazakhstan, Kazakh (Russian, foreign) language, Professional foreign language, Sociology, Culturology, Political science, Psychology	final examination	LMT
	BD	EC	Theoretical	180	6	3	ON 2	Formation of scientific	Engineering	Strength of	

Module 6-Basic special disciplines			mechanics					engineering thinking, familiarization with the basic concepts, laws and theorems that allow one to draw up equations that describe 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 the motion and equilibrium of mechanical systems in the study of disciplines of the professional cycle.	mathematics, applied physics.	Materials, Engineering Mechanics 2, Structural Mechanics, Engineering Mechanics 2	SI
			Engineering mechanics 1					ON 2	Formation of logical thinking and the scientific foundation of engineering education, study of the laws of motion and equilibrium of material bodies, construction of mathematical models of the behavior of mechanical systems using theorems of mechanics, use of methods for studying the equilibrium and motion of mechanical systems to solve technical problems.	Engineering mathematics, Applied physics	Strength of Materials, Engineering Mechanics 2, Structural Mechanics, Engineering Mechanics 2
	BD	EC	Resistance of materials	180	6	4	ON 2	Formation of fundamental knowledge in the field of calculations of structural elements for strength, rigidity and stability, development of computational and experimental fundamentals and practical methods for calculating structures subject to reliability, durability, efficiency, taking into account the mechanical properties of structures and the	Engineering mechanics 1, Geology and soil mechanics,	Structural Mechanics, Engineering Mechanics 3, Construction Machinery and Equipment, Construction Mechanization	SI

								ability to design according to strength criteria, correctly assessing the limit state, to carry out verification and design calculations using modern educational and information technologies.			
			Engineering mechanics 2				ON 2	To familiarize with the basic techniques for determining internal forces and stresses for each type of deformation, methods for calculating structures and their elements for strength, rigidity and stability, skills for studying loads, displacements and stress-strain states in structural elements, constructing design diagrams of machine parts and calculating products for meeting the requirements of reliability and efficiency under the influence of static and dynamic loads.	Engineering mechanics I Geology and soil mechanics, bases and foundations	Structural Mechanics, Engineering Mechanics 3, Construction Machinery and Equipment, Construction Mechanization	SI
BD	EC	Structural mechanics	180	6	5	ON 2	Studies the basic methods of calculating structural elements and structures for strength, rigidity and stability, to carry out 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, to correctly select structural forms and materials that provide the required indicators of reliability, safety and efficiency of both operated and created structures and	Engineering mathematics, Applied physics, Engineering mechanics 1.2	Construction technology, Organization and planning of construction of buildings and structures, Reconstruction of buildings and structures, Strengthening of structures of	SI	

								structures.		buildings and structures	
			Engineering mechanics 3				ON 2	Studies the theoretical foundations and methods of carrying out calculations for strength, rigidity and stability of structural elements of transport structures, the main types of mechanisms, parts and components of machines, general principles of design and construction, construction of models and algorithms for calculating products according to the main performance criteria when assessing the reliability of existing equipment in conditions operation.	Engineering mathematics, Applied physics, Engineering mechanics 1.2	Construction technology , Organization and planning of construction of buildings and structures, Reconstruction of buildings and structures, Strengthening of structures of buildings and structures	SI
Module 7- Engineering 1	BD	EC	The engineering geodesy	180	6	3	ON 4	Forms professional cc 24 that determine the readiness and ability to use basic knowledge in the field of geodesy, allows for geodetic measurements related to solving typical construction problems, detailed breakdown of structures, control of the geometric shapes of the structure being built, and perform as-built 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, Applied physics, Engineering mechanics 1,2,3	Fundamentals of design of buildings and structures, Introduction to the design of construction projects, Reconstruction of buildings and structures, Strengthening of structures of	SI

											buildings and structures	
			Basics of geoinformatics				ON 4	Studies the history of the development of geographic information systems (GIS), basic concepts and terms, general issues of geoinformatics, application technologies in subject areas of professional activity, the current state of technical, software and information support of GIS, forms an understanding of the features of creating a GIS, hardware and software, and applied GIS for use in business, management, science and technology.	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3	Fundamentals of the design of buildings and structures, Introduction to the design of construction projects, Reconstruction of buildings and structures, Strengthening the structures of buildings and structures	SI	
Module 7- Engineer	BD	EC	Basics of design of buildings and structures	180	6	4	ON 9	Studies trends in modern urban planning and architecture, gaining knowledge about the basic principles of design of buildings and structures, basic space-planning schemes of buildings, fundamentals of building design. The influence of natural and climatic factors on the planning and development of urban areas, the concepts of unification, typology and construction. When discussing the discipline, discussion is used.	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3	Structural mechanics, Engineering mechanics 3, Construction machines and equipment, Construction mechanization, Reconstruction of buildings and structures,	SI	

ing 1										Strengthening the structures of buildings and structures	
			Introduction to construction design				ON 4	To form the necessary set of knowledge on solving drawing and graphic problems using two-dimensional graphics, typical issues in the preparation of design documentation, methods for solving problems in the design of building structures using three-dimensional solid modeling methods, the use of computer technologies in the study of geometric and graphic problems. When studying the discipline, discussion is used.	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3	Structural mechanics, Engineering mechanics 3, Construction machines and equipment, Construction mechanization, Reconstruction of buildings and structures, Strengthening of structures of buildings and structures	SI
	BD	EC	Construction machinery and equipment	180	6	5	ON 8	Development of a systematic understanding of the mechanization of construction and construction machines, drives and running gear of construction machines, lifting and transport machines, machines for excavation work, machines for drilling and piling work, machines and equipment for preparing and transporting concrete and mortars and compacting	Ecology and life safety, Engineering geodesy, Construction materials, Electrical engineering and fundamentals of electronics	Construction technology, Organization and planning of construction of buildings and structures, Reconstruction of buildings and	ATSIB ZHD

Module 8- Engineering 2								concrete, machines for finishing works. Within the discipline, the calculation and analytical method is used.		structures, Strengthening of structures of buildings and structures	
			Construction mechanization				ON 8	Studies the general devices of construction machines, lifting - transport machines, machines for excavation and preparatory work, machines for crushing and sorting stone materials, machines and equipment for preparing concrete mixtures and solutions and their transportation, machines and equipment for distributing and compacting concrete mixtures, mechanized tool. Discussion is used within the discipline.	Ecology and life safety, Engineering geodesy, Construction materials, Electrical engineering and fundamentals of electronics	Construction technology, Organization and planning of construction of buildings and structures, Reconstruction of buildings and structures, Strengthening of structures of buildings and structures	ATSIB ZHD
	PD	EC	Construction mechanics	180	6	6	ON 7	It studies the basics of technical and tariff regulation in the construction industry, methods of performing construction work and processes, modern technologies used for the construction of buildings and to solve the problems of developing directive organizational and technological documentation on this informative basis. Discussion is used within the	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3 Construction machinery and equipment, Construction mechanization	Occupational Safety and Health, Organization of construction production, Organization and planning of construction of buildings and structures,	SI

Module 8- Engineering 2			Technological processes of construction work					discipline.		Reconstruction of buildings and structures, Strengthening of structures of buildings and structures	
								ON 7		Formation of the student's competencies in the field of construction processes using modern methods and technologies based on the use of effective building materials and structures, modern technical means, progressive labor organization, theoretical foundations of engineering calculations, design and execution of construction and installation work leading to the creation of the final construction products (individual parts of buildings and structures and completely finished objects) of the required quality. Discussion is 27 in the discipline.	
	PD	EC	Organization of construction production	180	6	7	ON 8	Studies the basic methods and technology of performing production processes using high-quality building materials and structures, modern technical means, progressive	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3 Construction	Reconstruction of buildings and structures, Strengthening	SI

Module 8- Engineering 2								organization of workers' labor, the structure and forms of organizing construction production, management in construction, methods for quality control of construction and operation of industrial and civil structures and linear facilities housing and communal services, machinery and equipment.	machinery and equipment, Construction mechanization	g of structures of buildings and structures	
			Organization and planning of construction of buildings and structures					ON 8	It studies the basic provisions and sequence of technological operations during the construction of buildings and structures, the principles of organizing the construction of individual objects or their complexes, organizational structures and production activities of construction and installation organizations, the basics of management and business activities, planning work in the field of industrial and civil construction and the development of schedules production of work, selection of a set of construction equipment and staffing of specialized teams.	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3 Construction machinery and equipment, Construction mechanization	Reconstructi on of buildings and structures, Strengthenin g of structures of buildings and structures
	PD	EC	Reconstruction of buildings and structures	180	6	8	ON 10	Studies the issues of inspection and inspection of buildings with the preparation of a technical report, methods of repair, strengthening and replacement of structures, redevelopment of premises, modernization of staircases and elevator units, construction of	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3 Construction machinery and equipment, Construction mechanization	final examination	SI

Module 8 Engineering 2								superstructures, extensions and built-in premises, methods of increasing the heat and waterproofing of buildings, modernization of external and internal networks, determines composition and procedure for developing design and estimate documentation for the reconstruction of buildings.			
			Strengthening the structures of buildings and structures					ON 10	Studies methods of design and calculation of structures when solving a set of problems in the field of strengthening and restoring elements of buildings and structures, the basic requirements for load-bearing and enclosed structures, the sequence and content of work when strengthening structures made of different materials, working documentation, design using technical literature. Best lectures by specialists are provided.	Engineering mathematics, Applied physics, Engineering mechanics 1,2,3 Construction machinery and equipment, Construction mechanization	final examination
Module 9- Resource management	PD	EC	Managerial Economics (Minor)	90	3	5	ON 6	Formation of a conceptual apparatus and development of economic analysis skills using modern models and patterns of economic science, consideration of economic problems and tasks facing the head of the company. Studying this discipline will allow students to gain and develop knowledge in the field of analytical research into the economic, technological and technical parameters of an enterprise, and will also allow them to master the skills of	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	final examination	LMT

								using special methods for economic justification of management decisions and assessing their consequences.			
Module 9- Resource management	PD	EC	Transport logistics (Minor)	90	3	6	ON 9	Study of the basic provisions of transport support for logistics systems, activities in the field of transportation, covering the entire range of operations and services for the delivery of goods from the manufacturer to the consumer, principles of design and construction of logistics systems. Mastering the skills of optimizing and organizing rational cargo flows, their processing in specialized logistics centers, ensuring an increase in their efficiency, reducing unproductive costs and expenses. Teaching methods are: problem solving, thematic colloquiums, brainstorming seminars. The discipline includes guest lectures by leading specialists from transport and logistics companies.	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	final examination	LMT
Module 9- Resource management	PD	EC	Resource saving in transport (Minor)	90	3	7	ON 5	Study of the main types and characteristics of energy resources, regulatory support for energy saving, increasing the energy efficiency of the transportation process; energy-saving technologies in repair production and in the operation of transport infrastructure facilities; organization and methods of energy saving management.	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	final examination	PS

								Problem solving, thematic colloquiums and debates are used. Guest lectures are being held by leading specialists in the transport and communications industry.			
Module 5 IT competencies	PD	EC	Time - management (Minor)	90	3	5	ON 6	Formation among students of general ideas about the essence and types of time management, principal methods of managing resources for more successful professional activities.	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Transport logistics, Resource saving in transport Final certification	LMT
Module 5-IT competencies	PD	EC	Digital diagnostics of construction objects (Minor)	90	3	6	ON 7	Study of digital information processing systems, main functional units, principles of information division and multiplexing, analysis of the characteristics of digital communication channels when diagnosing transport construction projects.	Fundamentals of computer modeling, Geology, soil mechanics, foundations and foundations, Fundamentals of calculation of limit states of building structures	Architectural and construction design of buildings and structures, Technology of construction of buildings and structures, Technical operation of buildings and structures	SI
Module 5-IT competencies	PD	EC	PowerBI Business Analytics (Minor)	90	3	7	ON 6	Teaches the skills of creating interactive visualizations of data obtained from various sources and sharing them with employees of the organization, obtaining valuable information when making strategic decisions, analyzing historical and current data, presenting results in intuitive visual	Fundamentals of economics and entrepreneurship, Fundamentals of law and anti-corruption culture	Technical operation of buildings and structures, Industrial practice 2, Reconstruction of buildings	ICTs

								formats, providing shared access to business-critical analytical information with using Power BI.		and structures, Strengthening of structures of buildings and structures.	
	Total			2310	77						

Head of the Department of "Construction Engineering"

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