

"APPROVED"
 Member of the Board - Vice-Rector
 for Academic Affairs NAO
 "Karaganda Technical University named after
 Abylkas Saginov"

 A.M. Temerbaeva
 " _____ » _____ 2023

Branch Manager
 LLP "KTZ - Freight transportation"
 "Karaganda branch of the State Enterprise"

 M.O. Ibraev
 " _____ » _____ 2023

Head of KPTU UD JSC ArcelorMittal
 Temirtau

 A.N. Manuylenko
 " _____ » _____ 2023

CATALOG OF ELECTIVE DISCIPLINES

Field of education 7M11 Services

Direction of training 7M113 Transport services

Educational program - 7M11301 "Organization of transportation, traffic and operation of transport" (2 years of study)

No	Number of ECTS credits/	List of elective disciplines	
		Educational program "Organization of transportation, traffic and operation of industrial transport"	Educational program "Organization of transportation, traffic and operation of railway transport"
1	2	3	4
PsiP 01 Psychological and pedagogical module			
1	4 (DB)	<p style="text-align: center;">IFN 5101 "History and Philosophy of Science" 1-2-0-1 Prerequisites SIK 1101 1-2-0-2* Post-requisitesMPTD 5202 1-2-0-2</p> <p>The purpose of studying the discipline is: forms a culture of scientific thinking among undergraduates, develops analytical abilities and research skills, provides theoretical and practical knowledge necessary for a future scientist. Contents of the main sections:subject of history and philosophy of science, ideological foundations of science, science. in the ancient world, the Middle Ages to the Renaissance. New European science is a classic stage in the development of science. Basic concepts and directions of the non-classical and post-non-classical stage of development of the history and philosophy of science. Structure and levels of scientific knowledge. Learning outcomes:know the nature, structure, principles of organization and functioning of science, fundamental basis and conceptual apparatus history and philosophy of science, be able to formulate and solve problems that arise in the course of research activities and require in-depth professional knowledge.</p>	
2	4 (DB)	<p style="text-align: center;">IYa (prof) 5102 "Foreign language (professional)" 0-3-0-1 Prerequisites SPZ (SPKP) 2106 4-1-0-4* IYa 1103 0-6-0-2* Post-requisites MPTD 5202 1-2-0-2</p> <p>The purpose of studying the discipline is:formation of the ability of foreign language communication in specific professional and business areas and</p>	

		<p>situations taking into account the peculiarities of professional thinking.</p> <p>Contents of the main sections:professionally oriented speech topics of the specialty, basic categorical and conceptual apparatus of a general technical nature in its foreign language expression, special material and its use in given professional situations.</p> <p>Learning outcomes:be able to build your verbal and nonverbal behavior in public and professional spheres of communication; have the skills to use a variety of language and speech means adequately to social factors and professional situations.</p>
3	4 (DB)	<p style="text-align: center;">PedVSh 5103 "Pedagogy of Higher School" 1-2-0-1</p> <p style="text-align: center;">PrerequisitesSPZ (SPKP) 2106 4-1-0-4* SIK 1101 1-2-0-2*</p> <p style="text-align: center;">Post-requisitesMPTD 5202 1-2-0-2</p> <p>The purpose of studying the discipline is:mastery by a master's student of the basics of professional and pedagogical culture of a higher school teacher.</p> <p>Contents of the main sections:Modern paradigm of higher education. Methodology of pedagogical science. Professional competence of a higher school teacher. Theory of learning in higher education (didactics). Contents of higher education. Organization of the learning process based on the credit system of education in higher education. Traditional and active methods and forms of organizing training in the preparation of future specialists. New educational technologies in higher education. Activities of an adviser, tutor and office registrar at a university. Organization of independent work of students in the conditions of credit technology. Theory of scientific activity of higher education. NIRS. Higher school as a social institution for the education and formation of a specialist's personality.</p> <p>Learning outcomes:designs the pedagogical process at the university; determines the ways of organizing and conducting the educational process at the university; predicts the results of teaching activities.</p>
4	3 (DB)	<p style="text-align: center;">PsiU 5104 "Psychology of Management" 1-1-0-1</p> <p style="text-align: center;">PrerequisitesSPZ (SPKP) 2106 4-1-0-4* SIK 1101 1-2-0-2*</p> <p style="text-align: center;">Post-requisitesMPTD 5202 1-2-0-2</p> <p>The purpose of studying the discipline is: formation of systemic ideas and understanding of the psychological essence of management activities; mastery of basic socio-psychological management methods; development of motivation for personal growth.</p> <p>Contents of the main sections:Methodological foundations of management psychology. Social and psychological problems of management and ways to solve them. Personality-oriented approach and socio-psychological methods of management. Personality in the system of social management. Personality as an object of management. Professionally significant qualities and professional skills of a specialist manager. Personality as an object and subject of management. Relationships in the work group. Management. Leadership. Fundamentals of the psychology of management communication. Psychological analysis of management activities. Psychology of preparation, management decision making.</p> <p>Learning outcomes:understands the psychological essence of management activities; analyzes the psychological characteristics of management effectiveness; masters basic socio-psychological management methods; has the skills to study and evaluate the individual psychological properties of management subjects; organizes group work based on the principles of team building; warns professional risks in management activities; resolves conflict situations in the production team; motivates management subjects to develop personal growth.</p>
5	5 (DB)	<p style="text-align: center;">PP 5105 "Pedagogical practice" 0-0-0-2</p> <p style="text-align: center;">PrerequisitesPsi 5104 1-2-0-1</p>

		<p style="text-align: center;">Ped 5103 1-0-1-1 Post-requisitesMPTD 5202 1-2-0-2</p> <p>The purpose of studying the discipline is:master's students acquire the skills of a teacher-researcher who owns modern scientific tools for searching and interpreting information material on transport for the purpose of using it in teaching activities. Contents of the main sections:covers all aspects of the future specialist’s activities. Pedagogical practice involves mastering by undergraduates various types of pedagogical activities: gnostic, design, organizational, communicative, diagnostic, analytical-evaluative, reflective, research-creative. Learning outcomes:is aimed at consolidating the knowledge acquired by undergraduates during their studies at a higher educational institution, acquiring new knowledge, skills and practical skills in professional and organizational work in the pedagogical field of activity.</p>	
Module MNEI 02 Module methods of scientific and experimental research			
6	5 HF	<p style="text-align: center;">ONI 5106 "Fundamentals of Scientific Research" 3-0-0-1 Prerequisites:ORMMRT Z 5107 1-3-0-1 Post-requisites: OORE 5206 1-3-0-1</p> <p>The purpose of studying the discipline is:formation of master's students' knowledge in the field of scientific research. Contents of the main sections:stages of research work; theoretical and experimental research; scientific and technical documentation; scientific and technical creativity. Learning outcomes:know general concepts about science, classification of sciences and scientific research, scientific documents and publications; be competent in carrying out the stages of research work.</p>	<p style="text-align: center;">MPNI 5106 "Methods of Scientific Research" 3-0-0-1 Prerequisites:MMRTZhD T 5107 1-3-0-1 Post-requisites: OORE 5206 1-3-0-1</p> <p>The purpose of studying the discipline is:gaining knowledge in the field of scientific research methodology. Contents of the main sections:methodology for carrying out research work; scientific and technical patent information; methods of inventive creativity. Learning outcomes:know general concepts about scientific research, scientific and technical documentation; be competent in performing theoretical and experimental research.</p>
7	5 HF	<p style="text-align: center;">ORMMRTZ 5107 “Fundamentals of the development of mathematical models for solving transport problems” 1-2-0-1 Prerequisites: ONI 5106 3-0-0-1 Post-requisites: OORE 5206 1-3-0-1</p> <p>The purpose of studying the discipline is:theoretical and practical knowledge in the field of development of mathematical models. Contents of the main sections:concept of a mathematical model; structural and functional models; formulating a mathematical problem; intelligent and digital methods for compiling mathematical models.</p>	<p style="text-align: center;">MMRTUZhDT 5107 “Mathematical modeling of the operation of technical devices of railway transport” 1-2-0-1 Prerequisites: MMNI 5106 3-0-0-1 Post-requisites: OORE 5206 1-3-0-1</p> <p>The purpose of studying the discipline is:obtaining theoretical and practical knowledge in the field of modeling and research of the operation of technical devices of railway transport. Contents of the main sections:simulation modeling, linear programming, dynamic programming, nonlinear programming; numerical methods for finding</p>

		<p>Learning outcomes: be able to create algorithms for solving problems of mathematical models; choose the optimal software environment for solving the problem of mathematical modeling; compose program codes using developed algorithms; perform debugging procedures compiled program codes; apply application programs to solve typical problems of mathematical modeling; be able to apply intelligent digital methods for developing mathematical models.</p>	<p>optimal solutions; intelligent digital methods for developing mathematical models. Learning outcomes: be able to create mathematical models of the operation of technical devices of railway transport; be able to apply optimization methods in the study of processes in railway transport; be able to use modern intelligent digital methods for compiling mathematical models; be able to use modern software for research of mathematical models.</p>
8	5 HF	<p>IOTP 5108 Operations Research in Transportation Processes 2-1-0-1 Prerequisites: ONI 5106 3-0-0-1 Post-requisites: OORE 5206 1-3-0-1</p> <p>The purpose of studying the discipline is: studying modern methods of decision-making in transport processes. Familiarization with mathematical, statistical and heuristic approaches in choosing optimal transport schemes. Contents of the main sections: to combinatorial problems of operation research. Fundamentals of linear and dynamic programming of transport problems. Theory of inventory management in warehouses. Fundamentals of queuing theory. The traveling salesman problem. Criterion for the efficiency of transport processes. Learning outcomes: gain the ability to mathematically describe the conditions of the decision-making process in transport, be able to choose a method of the theory of operations to determine the best result, know the criteria for assessing various transport problems.</p>	<p>OTZZhDT 5108 “Optimization of transport tasks in railway transport” 2-1-0-1 Prerequisites: MMNI 5106 3-0-0-1 Post-requisites: OORE 5206 1-3-0-1</p> <p>The purpose of studying the discipline is: to develop master's students' skills in choosing optimal solutions by analyzing the objective function of the problem under study. Contents of the main sections: study of optimization problems of linear programming (simplex method, transport problem); optimization of the transport network on the network diagram; optimization of mathematical models in the organization of transportation. Learning outcomes: be able to adopt optimization methods in the study of processes in railway transport; pose and solve linear programming problems of transport type, dynamic programming problems, build and calculate network planning models, queuing systems, determine their convergence with the results of statistical data.</p>
Module MP 03 Teaching Methods			
9	5 P/D	<p>K(R) Ya (Prof) 5201 “Kazakh (Russian) language (professional)” 0-3-0-2 Prerequisites: K(R) Ya 1104 0-6-0-2 Post-requisites: NIRM 5301 2-2-0-4</p> <p>The purpose of studying the discipline is: mastery of lexical and grammatical units by the undergraduate on the basis of information texts in the specialty, improvement of language skills, provision of professionally oriented language training. Contents of main sections: involves mastering the skills to carry out transformation</p>	<p>ways typical value expressions;</p>

		<p>to form knowledge of the rules for including syntactic units in a communicative act.</p> <p>Learning outcomes: know various linguistic and speech means adequate to social factors and professional situations. Be able to: perceive by ear the appropriate level of business, informational and professional messages, analyze information sources necessary to perform communication tasks of professional activities. Proficient in: writing letters of an official, professional nature; thoughts, opinions, information are presented consistently.</p>
10	5 P/D	<p style="text-align: center;">MPTD 5202 “Methods of teaching technical disciplines” 1-2-0-1</p> <p style="text-align: center;">Prerequisites: Ped 5103 4-5-0-3 Psi 5104 4-5-0-3 Post-requisites: PP 5205 0-0-0-3</p> <p>The purpose of studying the discipline is: formation of professional, pedagogical and methodological competencies of undergraduates to prepare them for future teaching activities.</p> <p>Contents of the main sections: content of vocational education. Functions of the teaching process in technical subjects. Curricula and training programs. Basic forms of organizing training in technical and special subjects. Lecture as the main form and method of teaching at a university. Didactics of practical and laboratory training. Control at the university. Analysis of the lesson as a condition for improving the quality of training. Teacher's image.</p> <p>Learning outcomes: conducts classes based on the methodological basis of higher education pedagogy and psychology; develops educational and methodological support for the educational process; uses IT technologies to optimize the educational process and effective learning educational information.</p>
Module TPT 04 Technological processes in transport		
eleven	6 P/D	<p style="text-align: center;">TRTS 5203 “Technology for the development of transport schemes” 2-2-0-1</p> <p style="text-align: center;">Prerequisites: IOTP 5108 2-1-0-1 Post-requisites: MMSPL 6204 2-1-0-1</p> <p>The purpose of studying the discipline is: study engineering survey methods for collecting and processing information about the design area and developing, on its basis, complex scientifically based projects for the construction of new and reconstruction of existing railways.</p> <p>Contents of the main sections: The subject of the discipline is the theory and practice of development and decision-making when choosing the main technical parameters of a project.</p> <p>Learning outcomes: be able to determine the power of the railway, make traction calculations of the specific forces of the main resistance to the movement of the locomotive and carriage, and design the profile.</p>
12	5 P/D	<p style="text-align: center;">MMSPL 6204 “Methods and models of network planning in logistics” 2-1-0-1</p> <p style="text-align: center;">Prerequisites: OPMMRTZ 5107 1-2-0-1 Post-requisites: PROKTS 6207 2-1-0-1</p>

		<p>The purpose of studying the discipline is:study the structure of domestic and interregional cargo transportation, solve problems for various types of transport related to the organization and management of the transportation process, improve the technical and economic assessment of the transportation process, transport and technological schemes for the delivery of goods and improve the procedure for processing cargo and commercial operations.</p> <p>Contents of the main sections:logistics of transport services and transport distribution systems, assessment of their competitiveness, methodological basis for forecasting transport projects</p> <p>Learning outcomes:skillfully predict freight flows on transport routes within the state and in transit using static and other data, select the type of transport to carry out specific transportation, taking into account competitiveness.</p>
13	5 P/D	<p style="text-align: center;">SPPMTP 6205 “Modern application programs for modeling transport processes” 1-2-0-1</p> <p style="text-align: center;">Prerequisites: ONI 5106 3-0-0-1 Post- requisites:ORMMRTZ 5107 1-2-0-1</p> <p>The purpose of studying the discipline is:the basis for the use of applied programs in scientific research and in the field of modeling transport processes.</p> <p>Contents of the main sections:basics of working with the Scilab software environment, variables, vectors and matrices, data entry in the Scilab environment, input and output of data into text and Excel files, plotting functions, user interface of the MathCad software environment, programming in the MathCad environment, plotting graphs in the MathCad environment.</p> <p>Learning outcomes:be able to use modern software tools aimed at solving mathematical problems and performing engineering calculations; apply methods for composing program codes to solve various groups of mathematical problems; compose and debug program codes to solve basic types of mathematical problems; apply application programs to solve typical problems of mathematical modeling; be able to use intelligent digital technologies to solve mathematical problems.</p>
		TS 05 Module Transport Systems
14	5 P/D	<p style="text-align: center;">OORE 5206 “Organization and processing of experimental results” 1-3-0-1</p> <p style="text-align: center;">ONI 5106 3-0-0-1 Post- requisites:SPPMTP 6205 1-2-0-1</p> <p>The purpose of studying the discipline is:obtaining theoretical and practical knowledge in the field of organization and processing of experimental results.</p> <p>Contents of the main sections:fundamentals of the theory of experimental planning; fundamentals of the theory of random errors and methods for estimating random errors in measurements; methods of graphical processing of experimental results and selection of empirical formulas.</p> <p>Learning outcomes:know the basics of the theory of experiment planning, methods for processing experimental results; be competent in organizing and performing experimental research.</p>

15	5 P/D	<p style="text-align: center;">PROKTS 6207 “Forecasting development and assessing the competitiveness of transport systems” 2-1-0-1</p> <p style="text-align: center;">Prerequisites: IOTP 5108 2-1-0-1</p> <p style="text-align: center;">Post-requisites: PI 6208 2-2-0-3</p> <p>The purpose of studying the discipline is:To study the structure of domestic and interregional cargo transportation, solve problems for various types of transport related to the organization and management of the transportation process, improve the technical and economic assessment of the transportation process, transport and technological schemes for the delivery of goods and improve the procedure for processing cargo and commercial operations.</p> <p>Contents of the main sections:Logistics of transport services and transport distribution systems, assessment of their competitiveness, methodological basis for forecasting transport projects.</p> <p>Learning outcomes:To skillfully forecast freight flows on transport routes within the state and in transit using static and other data, to select the type of transport to carry out specific transportation, taking into account competitiveness.</p>
16	5 P/D	<p style="text-align: center;">UNID 6209 Management of scientific and innovative activities 1-2-0-4</p> <p style="text-align: center;">Prerequisites: ONI 5106 3-0-0-1</p> <p>The purpose of studying the discipline is:developing master's students' skills in managing scientific-innovative/experimental-research activities, including its planning, implementation and monitoring in the area of training.</p> <p>Contents of the main sections:Planning of scientific and innovative activities; processing of experimental NID/EID data; analysis of experimental data NID/EID; feasibility study of R&D/EID and commercialization of projects; Monitoring the stages of scientific and innovative activities; formation of a design solution to a scientific and innovative problem; Preparation and publication of the results of scientific and innovative activities; presentation of the results of scientific and innovative activities for public protection.</p> <p>Learning outcomes:plan scientific and innovative activities; process experimental NID/EID data; analyze experimental NID/EID data; develop a feasibility study of NID/EID and study the commercialization of projects; monitor the stages of scientific and innovative activities; formulate a design solution to a scientific and innovative problem; prepare and publish the results of scientific and innovative activities; present the results of scientific and innovative activities for public protection.</p>

Head Department of PT

AskarovB.Sh.