



AGREED
Chief mechanic
«Almaty Zholdary» LLP
Zhunisbekov B.
 « 30 » 03 2023

APPROVED
Director of the institute
Transport Engineering
Chigambayev T.
 « 30 » 03 2023

CATALOG OF ELECTIVE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM

7M07147 - CARS AND ROAD MACHINERY

Level of education: master's degree profile

Time of study: 1,5 years

Year of admission: 2023 y.

| Cycle | Comp onent | Name of discipline | Total labor input | | Semester | Learning outcomes | Brief description of the discipline | Prerequisites | Post requisites |
|-------|------------|---------------------------------|-------------------|---------------------|----------|-------------------|--|---|-----------------|
| | | | in academic hours | in academic credits | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| BD | EC1 | Lean manufacturing | 270 | 9 | 2 | LO1 | Studies the basics of organization management based on the principles of lean production: minimizing all types of losses in the course of activity, achieving the maximum possible result in the shortest possible period of time, rational use of all types of resources, improving aspects of the organization's activities, involving employees in technological processes; formation of lean thinking among future managers, correlated with the ideas of concepts relevant to the modern world sustainable development and conscious consumption. | Management, Modern railway rolling stock, Resource and energy saving in transport | ERWMS, FC. |
| | EC2 | SMART technologies in transport | | | | LO1 | The intellectual technologies used in railway transport are considered and studied. The basic concepts of the current state and prospects for the development of railway transport infrastructure based on SMART technologies are described. Familiarization of students and the formation of skills for assessing the improvement of operational safety of railway infrastructure facilities, taking into account the development of computer technologies, software and artificial intelligence. Active teaching methods and brainstorming are used. | Modern railway rolling stock | ERWMS, FC. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|------|--|-----|---|---|-------------|--|-----------------------|--|
| PD | ЖК 9 | Жердегі технологиялық машиналар мен кешендер | 270 | 9 | 1 | ОН5, ОН7 | The discipline studies the scientific foundations of the organization of production and operation of technological machines and complexes. Issues of Rational Use and fundamentals of the organization of technical operation and maintenance of ground technological machines and equipment were considered. Within the framework of the discipline, interactive teaching methods are used, the form of assessment is an oral exam | Бакалавриат пәндері | Көліктегі бәсекеге қабілеттілік. ЖТЖМ жұмыс органдарының перспективалық түрлері. Көлік құралдарының перспективалық түрлері |
| | ЕС2 | Көлік техникасының сенімділігі | | | | LO1 | Studies the causes of changes in the technical condition of transport equipment, the problems of reliability of transport equipment and its properties, ensuring the reliability of motor vehicles, functional and quantitative indicators of reliability of technical elements and systems, tasks for predicting the state of machines, its diagnostics, ensuring the operability of machines, determining the Basic Laws of resource allocation and parameters of the law of distribution of calculations of reliability indicators of machines. Interactive teaching methods are used within the discipline | Undergraduate courses | ERWMS, FC. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|-----|--|-----|---|---|----------|---|-----------------------|---|
| PD | EC1 | Көлік құралдарының қауіпсіздігіне қойылатын талаптар және қамтамасыз ету | 180 | 6 | 1 | LO6, LO7 | To form the necessary set of knowledge about modern designs of vehicles in accordance with the qualification characteristics of a specialist of this profile, as well as elements that affect the safety of the operation of transport equipment. This discipline forms the level of a specialist in transport engineering. Within the framework of the discipline, theoretical and practical issues are considered: form operational, environmental indicators, largely determine the technical and production indicators of vehicles. Within the framework of the discipline, interactive teaching methods, the computational and analytical method, the case of tasks are used | Undergraduate courses | Technical operation and service of a rolling stock, High-Speed Railway Infrastructure, Reliability theory and quality management in transport, Lean manufacturing, ERWMS, FC. |
| | EC2 | Арнайы жер жұмыстарына арналған машиналар | | | | LO6, LO8 | Studies general information about machines and mechanisms for special earthworks, machines and equipment for soil compaction, preparation, machines and mechanisms for auxiliary earthworks, the basics of installation and operation of machines and mechanisms for special earthworks, methods for calculating the features of operation and operating parameters, methods for using a fleet of machines for special earthworks and increasing their productivity. Interactive teaching methods are used within the discipline | Undergraduate courses | Reliability theory and quality management in transport, ERWMS, FC. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|-----|---|-----|---|---|----------|---|---|------------|
| PD | EC1 | Көліктегі бәсекеге қабілеттілік | 180 | 6 | 2 | LO7, LO8 | To form a set of knowledge necessary for the training of specialists who have mastered the skills of professional activity in the field of analysis of the competitiveness of transport, which allows reasonable and full use of transport at a particular enterprise. Within the framework of the discipline, the following issues are studied: specific features of the organization of cargo and passenger transportation; performance of transport and forwarding services; technical impact on rolling stock, ensuring its safe working capacity; development of terminal systems and transport and forwarding services; navigation technologies of the transportation process by car. Form of Control-Oral Exam | Modern railway rolling stock, Resource and energy saving in transport / Rolling stock life cycle cost estimation. | ERWMS, FC. |
| | EC2 | ҚЖТЖМ жұмыс органдарының перспективалық түрлері | | | | LO5, LO6 | The discipline studies the issues of research, calculation, testing and operation of promising working bodies of construction and Road and road machines. The main methodological provisions for planning working bodies, conducting experiments and tests, processing and analyzing the information received using modern mathematical methods, registration and processing equipment are also given | Modern railway rolling stock | ERWMS, FC. |

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|--------------|-----|---|-------------|-----------|---|---------------------|--|---|------------|
| PD | EC1 | Көлік құралдарының перспективалық түрлері | 180 | 6 | 2 | LO4, LO7, LO8 | Studies promising types and classifications of vehicles and their aggregates: electric vehicles, hybrid vehicles, modern types of internal combustion engines and electric motors. As well as the features of their repair and maintenance, the development and implementation of new promising areas of effective operation of modern vehicles. This will allow the future specialist to develop and implement new promising areas of effective operation of the transport fleet. As part of the teaching of the discipline, interactive teaching methods and discussion are used | Modern railway rolling stock, Resource and energy saving in transport / Rolling stock life cycle cost estimation. | ERWMS, FC. |
| | EC2 | ҚЖТЖМ автоматтандырылған жобалау жүйелері | | | | LO5, LO7 | The discipline examines the implementation of Computer-Aided Design Systems on construction and Road, road machines; a complex of technical and software tools of automation; three-dimensional modeling; basic methods of Computer-Aided Design and model calculations of SDPM, graphic information I / O and data preparation devices used to form an information image of a document, replacing in-kind tests and layouts with mathematical modeling, the use of methods variant design and optimization | Resource and energy saving in transport. | ERWMS, FC. |
| Total | | | 1080 | 36 | | | | | |

Head of the department "ATS&BZHD"



Shingisov B.