JSC « ALT Mukhametzhan Tynyshbayev University»

APPROVE
Chairman of the ALT University AC
_____ M. Zharmrgambetova

Decision of the Academic Council of
ALT University
«30» 05 2025 year (protocol №10)

THE PROGRAM
OF THE ENTRANCE EXAM TO THE DOCTORAL PROGRAM

Group of educational programs: «D104 Transport, transport equipment and technologies»

Almaty 2025

The program of the entrance exam was discussed and received a positive decision at the meeting of the department «Motor vehicles and life safety», Protocol No. 10 of June 04, 2025.

Acting Head Head of the Department
«Motor vehicles and life safety» _____ **A.E. Toylibayev**

The program of the entrance exam was discussed and received a positive decision at the meeting of the Department of «Rolling Stock», Protocol No. 10 of June 03, 2025.

Head of the Department
« Rolling Stock » _____ **T.O. Chigambayev**

The program of the entrance exam was reviewed and recommended at the meeting of the Council of the Institute of «Transport Engineering», Protocol No. 6 of June 23, 2025.

Chairman of the CI
«Transport and construction» _____ **Sh.A. Abdreshov**

CONTENT

1. The purpose of the entrance exam for a group of educational programs

The purpose of the entrance exam for groups of educational programs is to determine the theoretical and practical readiness of the applicant for doctoral studies, the level of compliance of knowledge, skills and abilities with the requirements of doctoral studies in the field of training.

The entrance exam for doctoral studies consists of writing an essay and an exam on the profile of a group of educational programs.

2. Regulations for conducting the entrance exam for doctoral studies in a group of educational programs

The duration of the entrance examination is 3 hours and 30 minutes, during which the applicant writes an essay and answers an electronic exam ticket consisting of 3 questions. The list of questions and the essay topic are generated randomly. The maximum score for the entrance examination is 100 points, distributed as follows: essay writing – 20 points, exam on the educational program profile – 50 points, and interview – 30 points..

3. Types and evaluation criteria

3.1 Essay evaluation criteria

Types of essays	Description	The volume of the essay
Motivational	The applicant's argumentation about the motivations for research activities (research statement)	At least 250 words
Scientific and analytical	Substantiation by applicants of the relevance and methodology of the proposed research (research proposal)	
Problem-themed	Presentation of the author's position on relevant aspects of subject knowledge	

Criteria	Descriptors	Scores
Depth of disclosure of the topic	the problem is disclosed at the theoretical level, with the correct use of scientific terms and concepts	4
	the author presents his own point of view (position, attitude) when revealing the problem	4
Argumentation, evidence base	the presence of arguments from scientific literature and sources corresponding to the topic of the essay	4
Compositional integrity and logic of presentation	the presence of compositional integrity, the structural components of the essay are logically connected	4
Speech culture	demonstration of a high level of academic writing (vocabulary, knowledge of scientific terminology, grammar, stylistics)	4
	Maximum number of points	**20**

3.2 Criteria for evaluating the answers to the questions of the electronic examination card

The exam in the profile of the group of educational programs includes 3 blocks of questions, of which: the 1st question determines the level and consistency of theoretical knowledge; the 2nd question reveals the degree of formation of functional competencies; the 3rd question is aimed at determining systemic competencies. The maximum number of points is 50.

The electronic exam ticket consists of 3 questions:

Blocks	The nature of the question	Number of points
1st question	theoretical – determines the level and consistency of theoretical knowledge	10
2nd question	practical – reveals the degree of formation of functional competencies (the ability to apply techniques, technologies and techniques in the subject area)	20
3rd question	reveals a systematic understanding of the subject area under study, specialized knowledge in the field of research methodology (system competencies)	20
TOTAL		**50**

Criteria for evaluating the answers to the questions of the electronic examination card:

Question	Evaluation criteria	Number of points
1st question	demonstrates knowledge of the main processes of the studied subject area; the depth and completeness of the disclosure of the issue	5
	logically and consistently expresses his own opinion on the issue under discussion	3
	has a conceptual and categorical apparatus, scientific terminology	2
	Total	**10**
2nd question	applies methods, techniques, technologies to solve problems in the subject area	7
	argues, compares, classifies phenomena, events, processes; draws conclusions and generalizations based on practical skills	7
	analyzes information from various sources	6
	Total	**20**
3rd question	critically analyzes and evaluates theoretical and practical developments, scientific concepts and current trends in the development of science	7
	synthesizes methodological approaches in the interpretation of the main problems of subject knowledge	7
	identifies causal relationships in the analysis of processes, phenomena, events	6
	Total	**20**
	IN TOTAL	**50 points**

3.3 Interview evaluation criteria

№	Criteria	Descriptors	Scores
1.	Motivation	Argumentation of motives for studying for a doctoral degree in a selected OP and admission to a certain university. Vision of the prospects for professional and personal growth upon completion of training.	5
2	Research competence	Possession of research skills and experience necessary for research activities in a specific subject area.	10
3.	Creativity	Non-standard thinking, creative and alternative approaches to solving problems, situational tasks.	10
4.	Communicativeness	The ability to briefly, representatively, logically, argumentatively state your point of view, make generalizations and conclusions. Language proficiency.	5
Maximum number of points			**30**

4. Content of examination materials

4.1 Content of the Essay topic

№	The topic of the essay
1	The methodology of experimental tests of the operational reliability of freight wagons
2	The methodology of experimental tests of operational reliability of passenger and high-speed railcars
3	Reliability and operational safety of railway rolling stock
4	The main operational indicators of enterprises for the maintenance and repair of wagons and locomotives
5	Maintenance management of rolling stock in railway transport
6	Modern rolling stock of foreign countries
7	Modern methods in assessing the operational reliability of road construction and track machines
8	Maintenance of road construction and track machinery and prospects for the development of a maintenance and repair system
9	The basic concepts of reliability in the operation of transport equipment and ways to improve reliability
10	Prospects for the development of motor vehicles, taking into account automation and the development of artificial intelligence systems

4.2 The content of the sections on the blocks submitted for the entrance exam

Examination materials for the entrance exams to the doctoral program for groups of educational programs, including the subject of essays, examination questions on the profile are made in three languages: Kazakh, Russian and English.

The topics of the examination questions correspond to the selected sections from the curricula of the cycles provided for by the groups of educational programs **«D104 – Transport, transport equipment and technologies»**:

№	Name of disciplines
1	Modern railway rolling stock
2	Promising types of motor vehicles
3	Promising types of working bodies of road construction and track machines
4	Interaction of track and rolling stock
5	Design, calculation of road construction machines and cars
6	Methodology and methods of scientific research

4.3 The content of sections by blocks submitted for the entrance exam

Block 1

1. Modern railway rolling stock
2. Promising types of motor vehicles
3. Promising types of working bodies of road construction and track machines
4. Interaction of track and rolling stock
5. Design, calculation of road construction machines and cars
6. Methodology and methods of scientific research

Block 2

1. Modern railway rolling stock
2. Promising types of motor vehicles
3. Promising types of working bodies of road construction and track machines
4. Interaction of track and rolling stock
5. Design, calculation of road construction machines and cars
6. Methodology and methods of scientific research

Block 3

1. Modern railway rolling stock
2. Promising types of motor vehicles
3. Promising types of working bodies of road construction and track machines
4. Interaction of track and rolling stock
5. Design, calculation of road construction machines and cars
6. Methodology and methods of scientific research

4.2 Content of interview questions

1. Modern railway rolling stock
2. Promising types of motor vehicles
3. Promising types of working bodies of road construction and track machines

4. Interaction of track and rolling stock
5. Design, calculation of road construction machines and cars
6. Methodology and methods of scientific research

5. Recommended literature

5.1 Basic literature

1. Кадыров А.С. Основы научных исследований. Монография / А.С. Кадыров, И.А. Кадырова. — Караганда: Изд-во КарГТУ, 2015.
2. Методы обеспечения работоспособного технического состояния автотранспортных средств: Учебник / С.М. Мороз. – М.: МАДИ, 2015.
3. АкчуринА.Г. Основы технической эксплуатации транспортной техники: учебник / А.Г. Акчурин.- Алматы: КазАТК, 2011.
4. Солоненко В.Г. и др. Грузовые и пассажирские вагоны: Учебник для ВУЗов ж.д. транспорта. – Алматы: Эверо, 2012.
5. Куанышев Б.М, Абдуллаев С.С., Бакыт Ғ.Б. Тепловоз ТЭ33А производства АО «Локомотив құрастырузауыты»: Учебное пособие. - Алматы: КазАТК, 2015.
6. Мусаев Ж.С. Высокоскоростной подвижной состав: Учебное пособие. – Алматы: Эверо, 2012.
7. Баубеков Е.Е. Технологическое проектирование предприятий автомобильного транспорта: учебное пособие. - Алматы: КазАТК, 2020.- 193 с.
8. Таран М.В., Кульгильдинов М.С. и др. Транспорт и транспортная техника: Учебно-методическое пособие. – Алматы: КазАТК, 2014.
9. Мусаев Ж.С., Нурмамбетов С.М., Ивановцева Н.В., Бекмамбет К.М. Динамика транспортной техники: Учебник. - Алматы: КазАТК, 2014.
10. Надежность транспортной техники: учебник / Под ред. Ж.О.Кульсеитова.- Алматы: Ассоциация вузов РК, 2012.
11. Баубеков Е.Е.Техническая эксплуатация автомобилей: учебное пособие – Алматы: КазАТК, 2020.- 120 с.
12. Энергетические установки транспортной техники: справочное пособие / М.О. Мусабеков, Ғ.Б. Бақыт, А.М. Өмірбек.- Алматы: КазАТК, 2018.

5.2 Additional literature

1. Основы технической эксплуатации транспортной техники: учебник для студентов, магистрантов и докторантов / С. Ж. Кабикенов [и др.]. - Алматы : Эверо, 2018. - 311 с.
2. Основы технической эксплуатации транспортной техники/С.Ж. Кабикенов, М.М. Кириевский, В.В.Шалаев; Карагандинский государственный технический университет. Караганда: Издательство КарГТУ, 2014. -261 с.
3. Көлік техникасын техникалық пайдалану негіздері. Оқу құралы/Копенов Б.Т. – Алматы, 2011. – 110 с.
4. Көлік техникасын техникалық пайдалану негіздері. Оқу құралы/Кардасинов С. – Алматы, 2013. – 96 с.
5. Мусабеков М.О. Энергетические установки транспортной техники // учебное пособие. Алматы, 2011.
6. Кончаков Е.И. Техническая диагностика судовых энергетических установок: учеб. пособие. - Владивосток: Изд - во ДВГТУ, 2007. - 112 с.
7. Мелисаров, В.М. Тепловой расчёт и тепловой баланс карбюраторного двигателя и двигателя с впрыском топлива: учебное пособие / В.М. Мелисаров, П.П.

Беспалько, М.А. Каменская. – Тамбов : Изд-во Тамб. гос. техн. ун-та, 2009.

8. Мелисаров, В.М. Тепловой расчёт и тепловой баланс дизельного двигателя без наддува и с турбонаддувом. Расчёт основных деталей двигателя: учебное пособие / В.М. Мелисаров, М.А. Каменская, П.П. Беспалько, А.М. Каменский. – Тамбов : Изд-во ФГБОУ ВПО «ТГТУ», 2011.