

APPROVED

**at a meeting of the Academic Council
of NJSC «KazNU named after al-Farabi»
Protocol № 11 from 23.05.2025 y.**

Entrance Examination Program for Applicants to Doctoral Studies in the Educational Program Group D128 – “Land Management”

I. General Provisions

1. This program is developed in accordance with the Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018, No. 600 “On the Approval of Standard Rules for Admission to Education in Organizations Implementing Educational Programs of Higher and Postgraduate Education” (hereinafter referred to as the Standard Rules).

2. The doctoral entrance examination consists of an interview, writing an essay, and a subject-specific examination.

Component	Points
1. Interview	30
2. Essay	20
3. Examination in the profile of the educational program group	50
Total / Passing score	100 / 75

3. The duration of the entrance examination is 3 hours and 10 minutes, during which the applicant writes an essay and answers questions from an electronic examination ticket. The interview is conducted at the university prior to the entrance exam.

II. Procedure for the Doctoral Entrance Examination

1. Essay Writing. Applicants to the doctoral program in the educational program group D128 “Land Management” must write a problem-based or thematic essay. The required length is at least 250 words.

The aim of the essay is to assess the applicant’s analytical and creative abilities, as demonstrated through their capacity to construct personal arguments based on theoretical knowledge, social context, and individual experience.

Types of essays:

- A motivational essay, revealing the applicant's reasons for pursuing research;
- A scientific-analytical essay, justifying the relevance and methodology of the proposed research;
- A problem-based or thematic essay, addressing various aspects of scientific knowledge within the field.

2. The electronic exam consists of 3 questions.

Preparation topics for the profile of the educational program group:

Discipline: Planning and Organization of Rational Land Use and Protection

Fundamentals of land management. The concept of land management. Land as a natural resource, a means of production, and a spatial basis for the location of all sectors of the economy. Land as an object of socio-economic relations. Land resources of the Republic of Kazakhstan and their use. Land tenure systems and land reforms. Patterns in the development of land management. Goals, objectives, and principles of land management. Properties of land considered in land management. Natural and socio-economic conditions accounted for in land management. Effectiveness and economic justification of measures for the rational use and protection of land. The concept and components of the land management system in Kazakhstan. Legal and regulatory framework for land management. Land management documentation.

Organization and procedures for conducting land management. Main types and content of work in the planning and organization of rational land use and protection. General scheme of land resources of the Republic of Kazakhstan. Regional land management schemes (province/district level). Land use and protection schemes. Natural-agricultural zoning and functional zoning. Methodology for developing land protection measures within land management schemes. Effectiveness of land management scheme implementation.

Discipline: Economic-Mathematical Methods and Models in Land Management

Concept of modeling. Types, forms, and classes of mathematical models used in land management. Types of production functions and methods of representation. Calculation of parameters for production functions. Evaluation of production functions using correlation-regression analysis. Economic characteristics of production functions and their application in land management. Linear programming models. Simplex method. Transportation (distribution) model. Information support for modeling. Selection of variables and formulation of constraints. Analysis and adjustment of optimal solutions.

Discipline: Land Management Design

Inter-farm Land Management. Object, subject, methods, and principles of land management design. Definition of inter-farm land management. Principles and reasons for conducting inter-farm land management. Types, forms, and tasks of inter-farm land management. Content of inter-farm land management in the organization of land holdings and land use by agricultural enterprises. Reorganization of existing land holdings and land use in agriculture. Types of non-agricultural land use. Principles of land use formation for non-agricultural purposes. Specifics of various types of non-agricultural land use formation. Reclamation and improvement of disturbed lands in inter-farm land management. Restrictions and encumbrances in land use and their consideration in inter-farm land management. Definition, purpose, and content of land demarcation. Land demarcation methods. Requirements for land boundary establishment and field documentation. Cadastral (demarcation) plan: purpose and content.

Intra-farm Land Management. Definition and objectives of intra-farm land management. Components and elements of intra-farm land management projects. Placement of production units and farm centers. Layout of internal farm roads, infrastructure, and common-use facilities.

Definition, objectives, and content of land use and crop rotation planning. Crop rotation system organization. Organization of areas under crop rotation. Layout of perennial plantations. Layout of pasture areas. Layout of hayfields. Implementation of intra-farm land management projects. Objectives and content of working projects. Objects and stages of project design. Types and classification of working projects. Concept, importance, and types of budget documentation in project design. Regulatory and informational base for cost estimates. Methods and procedures for implementing working projects related to land use and protection.

III. List of References Used

Main Sources:

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