

«APPROVED»



Member of the Management Board,
Vice-Rector for Operations
PJSC «Al-Farabi KazNU»

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**The program of
the entrance exam for the group of educational programs of the Faculty of Biology
and Biotechnology for
PhD degree
for foreign citizens to study on a paid basis**

1. General Provisions

1.1 The program was drawn up in accordance with the Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018, No. 600 «On approval of the Model Regulations for admission to studies in educational organization, implementing educational programs of technical and vocational education» (hereinafter – the Standard Rules).

1.2. In Al-Farabi KazNU for educational programs of postgraduate education (doctoral studies) are admitted persons who have mastered educational programs of postgraduate education. The admission to the doctoral program is allowed to applicants who have a “Master’s” degree.

1.3. Entrance examinations according to Annex 2 to the Standard Rules are held **in the format of an interview** for the following groups of educational programs:

- ✓ 8D05101 – Biology
- ✓ 8D05105 – Biotechnology
- ✓ 8D05111- Microbiology
- ✓ 8D05112- Environmental bioengineering
- ✓ 8D05104 – Genetics
- ✓ 8D05108 – Geobotany
- ✓ 8D08401 – Fisheries and industrial fishing
- ✓ 8D05109 – Neuroscience

1.4 For the organization and conduct of entrance examinations for admission of a foreign applicant by the decision of the rector of AL-FARABI Kazakh National University is creating an examination committee for the period of examinations.

The commission of entrance examinations for admission of a foreign applicant to KazNU includes employees of the Internationalization and Recruiting Office (hereinafter referred to as the Office) and the professor-teaching staff of KazNU.

1.5 In case a foreign applicant who meets the above requirements has no possibility to come to the University for an entrance interview, he has the opportunity to take it online.

1.6 Entrance exam in the form of oral conversation (interview) for admission to a foreign applicant are evaluated on a 100-point system. When enrolling on a paid basis, 75 points are counted.

1.7 Based on the results of the entrance exam, an interview protocol is drawn up in the prescribed form according to the requirements of the Office. The interview record is signed by the chairman and all members of the commission present and submitted to the Office.

1.8 The decision on admission is made by the University Admissions Committee on the results of the interview. The results of the entrance exam are announced on the same day.

1.9 Retaking the entrance exam is not permitted.

1.10 An appeal against the results of the interview is not considered.

2. Conducting the entrance exam in 2024

2.1 The interview is conducted in Russian, Kazakh and English. The oral interview also contains questions aimed at revealing the ability to learn, creative activity and critical thinking, personal qualities of the applicant.

2.2 An indicative list of interview topics:

1. Biotechnological and microbiological production
2. Probiotics and antibiotics
3. Bioenergy
4. Engineering enzymology
5. General concepts of phytopathology
6. Genetics of the relationship between host plants and their parasites
7. Biotechnology of agricultural plants
8. Clonal micropropagation and plant health improvement
9. Biotechnology of enzyme production
10. Amino acid production
11. Karyotyping
12. Bioethics of genetic research
13. General principles and methods of genetic engineering
14. Cloning of genes. Transgenic plants and animals
15. The genetic foundations of evolution. Population genetics. Plant and animal breeding
16. Life forms of plants. Plant taxonomy
17. Ecological classification of phytocenoses
18. Stem cells
19. Factors affecting natural resources in environmental management. Ways to protect, preserve and extract natural resources
20. Basic patterns of vegetation structure

2.3 List of recommended literature for preparation:

1. Sazykin Yu.O., Orekhov S.N., Chakaleva I.I. Biotechnology. M., 2006.
2. Egorova T.A., Klunova S.M., Zhivukhina E.A. Fundamentals of biotechnology. M. 2006.
3. Volova T.G. Biotechnology. Novosibirsk, 1999.
4. Almaganbetov K.H. Biotechnology, 2007
5. Yemtsev V.T., E.N. Mishustin., Microbiology, Bustard, Moscow.2005
6. John E.Smith Biotechnology, Cambridge, 2009
7. Bondarenko V.M., Matsulevich T.V. Intestinal dysbiosis as a clinical and laboratory

syndrome: the current state of the problem. - M., Geotar-Media. - 2007.

8. Gennis R. Biomembranes: Molecular structure and functions/trans. from English M.: Mir, 1997. - 624 p.

9. Biological membranes: Methods/ translated from English, ed. Findlay J.B., Evanza U.G. - M.: Mir, 1990. - pp. 196-250.

10. Nolting B. The latest methods of biosystem research. M. Technosphere, 2005. 254 p.

11. Osterman L. A. Methods for the study of proteins and nucleic acids. - M.: ICNMO, 2002. - 248 p.

12. Bulychev A.A., Vekhoturov V.N., Gulyaev B.A. and coauthors. Modern methods of biophysical research. M. Higher School. 1988. 359s.

13. Kartseva A.A. Liquid chromatography in medicine - Soros Educational Journal. -Vol. 6. - №11. - 2000.

14. Otto M. Methods of analytical chemistry (in 2 volumes). - M.: Technosphere, 2004.

15. Singer M., Berg P. Genes and genomes. M.: Mir. 1998. vol.1. - 373 p. vol.2. - 391 p.

16. Makrushin N. M., Plugatar Yu. V., Makrushina E. M., Goncharova Yu. K., Goncharov S. V., Shabanov R. Yu. Genetics: textbook for universities: 2nd ed. - SP-b.: Publishing house "Lan". - 404 p.

17. Inge-Vechtomov, S. G. Genetics with the basics of breeding: a textbook for students. higher. studies. institutions. - 3rd ed. - St. Petersburg: Publishing House N-L, 2015. - 718 p.

18. Zhimulev I.N. Objective and molecular genetics: a textbook for universities - Novosibirsk: Siberian University Publishing House, 2017. - 480 p.

19. Severtsov A.S. Theories of evolution: textbook for universities/ A.S. Severtsov. - 2nd ed., ispr. and add. - M.: Yurayt Publishing House, 2020. - 384 p.

20. Biyasheva Z.M., Lovinskaya A.V., Dauletbaeva S.B., Kalimagambetov A.M. Statistical methods in biology with software: Textbook for biological specialties: Almaty - Kazakh University, 2019. - 108 p.

21. Mukhitdinov N.M. Geobotany, - Almaty: Kazakh University, 2011.

22. Mirkin B. M., Naumova L. G., Solomets A. I. Modern science of vegetation. - M.: Logos, 2001. - 263 p.

23. Mukhitdinov N.M., Almerkova Sh.S., Serbaeva A.D. Plant coenopopulation, Almaty: Kazakh University, 2019, 340c.

24. Mukhitdinov N. Fundamentals of biogeocenology. A study guide. - Almaty: Kazakh University, 2007. - 140 m

25. Dylis N.V. Fundamentals of biogeocenology publishing House of Moscow State University, 1978,152p

26. "Red Book of Kazakhstan"

27. Turasheva S.K. Application of plant biotechnology: Monograph. Almaty: Qazaq University, 2020, 114 p.

28. Fundamentals of microbiology. The eleventh edition. - 2021. - Edited by Talaro K.P.

29. Pharmaceutical Microbiology of Hugo and Russell, 9th edition - 2023. - Edited by Brendan F.

3. Scale and assessment criteria of the entrance examination for admission to the doctoral program for foreign citizens on a fee-paying basis:

Number of points	Compliance criteria
90–100 points «Excellent»	Demonstrates knowledge of the fundamental processes within the studied subject area; depth and completeness of addressing the issue; logically and sequentially expresses own opinion on the discussed problem; possesses conceptual-categorical framework, scientific terminology; logical coherence of the answer, adherence to the norms of contemporary scientific language.
80–89 points «Good»	Competent use of scientific terminology; mastery of conceptual-categorical framework; problem-oriented presentation of formulated questions; occasional errors in presenting factual material; incompleteness in presenting scientifically established facts within the scope of questions; logical coherence of the answer, adherence to the norms of contemporary scientific language.
75–79 points «Satisfactory»	Insufficient use of scientific terminology; inadequate mastery of conceptual-categorical framework; ability to address only one of the problems formulated in the questions; errors in presenting factual material; superficial knowledge of the subject area; violation of logical coherence in the answer, norms of contemporary scientific language.
0–74 points «Unsatisfactory»	Absence of necessary scientific terminology in the answers; descriptive presentation of discussed issues, inability to identify and present problems; gross errors in presenting factual material; lack of knowledge of historiography of the studied subject area.