«APPROVED»
Member of the Board – Vice Rector for Academic Affairs
NJC «Al-Farabi KazNU»
_____ Kazmagambetov A.G.
«____» _____ 2025

Entrance exam program
for doctoral educational programs
of the Faculty of Biology and Biotechnology
for foreign citizens on a fee-paying basis

1. General provisions

1.1. The program is compiled 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 Rules for admission to study in educational organizations implementing educational programs of higher and postgraduate education" (hereinafter - the Model Rules).

1.2 In the Al-Farabi Kazakh National University, persons who have mastered the educational programs of postgraduate education are admitted to educational programs of postgraduate education (doctoral studies). Persons with a master's degree are admitted to doctoral studies.

1.3 Entrance examinations are held in the interview format for the following educational programs:

- ✓ 8D05101 – Biology
- ✓ 8D05105 – Biotechnology
- ✓ 8D05111-Microbiology
- ✓ 8D05112--Environmental Bioengineering
- ✓ 8D05104 – Genetics
- ✓ 8D05108 – Geobotany
- ✓ 8D08401 – Fisheries and Industrial Fishing
- ✓ 8D05102-Biomedicine
- ✓ 8D05109 - Neuroscience
- ✓ 8D01504 – Biology

1.4 For the organization and conduct of entrance examinations for admission of a foreign applicant, by the decision of the Rector of the Al-Farabi Kazakh National University. Al-Farabi creates an examination subject committee for the academic year.

The entrance examination committee for admission of a foreign applicant to KazNU includes employees of the Department of Internationalization and Recruitment (hereinafter referred to as DIR) and the faculty of KazNU.

1.5 If a foreign applicant who meets the above requirements is unable to come to the University to undergo an entrance interview, he has the opportunity to pass it online.

1.6 Entrance examinations in the form of an oral conversation (interview) for admission of a foreign applicant are assessed on a 100-point system. When enrolling in doctoral studies on a paid basis, 75 points are counted.

1.7. Based on the results of the entrance examination, an interview protocol is drawn up in the prescribed form. The interview protocol is signed through the Salem office system by the chairman and all present members of the commission and transferred to DIR.

1.8. The decision on admission is reviewed by the selection committee for enrollment of foreign applicants and is formalized in a protocol through the Salem office system. The results of the entrance exam are announced on the day of the exam.

1.9. Retaking the entrance exam is not permitted.

1.10. An appeal is provided based on the results of the interview within 24 hours.

2. Conducting an entrance exam in 2025

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

2.1 Approximate list of interview topics:

1. Biotechnological and microbiological production
2. Probiotics and antibiotics
3. Bioenergetics
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 for obtaining enzymes
10. Production of amino acids
11. Karyotyping
12. Bioethics of genetic research
13. General principles and methods of genetic engineering
14. Gene cloning. Transgenic plants and animals
15. Genetic bases 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 influencing natural resources in nature management. Ways of protection, conservation and extraction of 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. Moscow, 2006.
2. Egorova T.A., Klunova S.M., Zhivukhina E.A. Fundamentals of biotechnology. Moscow, 2006.
3. Volova T.G. Biotechnology. Novosibirsk, 1999.
4. Almaganbetov K.Kh. Biotechnology, 2007
5. Emtsev V.T., E.N. Mishustin., Microbiology, Drofa, Moscow.2005
6. John E.Smith Biotechnology, Cambridge, 2009
7. Bondarenko V.M., Matsulevich T.V. Intestinal dysbacteriosis as a clinical and laboratory syndrome: 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 / trans. from English, edited by Findlay J.B., Evanza W.G. - M.: Mir, 1990. - P. 196-250.
10. Nolting B. The latest methods for studying biosystems. M. Technosfera, 2005. 254 p.

11. Osterman L.A. Methods for studying proteins and nucleic acids. - M.: MCNO, 2002. - 248 p.
12. Bulychev A.A., Vekhoturov V.N., Gulyaev B.A. and co-authors. Modern methods of biophysical research. Moscow: Higher school. 1988. 359 p.
13. Kartseva A. A. Liquid chromatography in medicine - Soros educational journal. - Vol. 6. - No. 11. - 2000.
14. Otto M. Methods of analytical chemistry (in 2 volumes). - Moscow: Tekhnosfera, 2004.
15. Singer M., Berg P. Genes and genomes. Moscow: Mir. 1998. v. 1. - 373 p. v. 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. – SPb: Lan Publishing House. – 404 p.
17. Inge-Vechtomov, S. G. Genetics with the Basics of Selection: a textbook for students of higher educational institutions. - 3rd ed. – St. Petersburg: N-L Publishing House, 2015. - 718 p.
18. Zhimulev I.F. General and Molecular Genetics: a textbook for universities – Novosibirsk: Siberian University Publishing House, 2017. – 480 p.
19. Severtsov A.S. Theories of Evolution: a textbook for universities / A.S. Severtsov. – 2nd ed., corrected. and add. – M .: Yurait 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 - Kazak 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. - Moscow: Logos, 2001. - 263 p.
23. Mukhitdinov N.M., Almerekova Sh.S., Serbaeva A.D. Cenopopulation of plants, Almaty: Kazakh University, 2019, 340 p.
24. Mukhitdinov N. Fundamentals of Biogeocenology. Textbook. - Almaty: Kazakh University, 2007. - 140 m.

25. Dylis N.V. Fundamentals of Biogeocenology, Moscow State University Publishing House, 1978, 152 p.
26. "Red Book of Kazakhstan"
27. Turasheva S.K. Application of Plant Biotechnology: Monograph. Almaty: Qazaq University, 2020, 114 p.
28. Foundations in Microbiology. Eleventh Edition. - 2021. - Edited by Talaro KP.
29. Hugo and Russell's Pharmaceutical Microbiology, 9th Edition - 2023. - Edited by Brendan F.

3. The scale and criteria for assessing the entrance exam for admission to doctoral studies for foreign citizens on a fee-paying basis:

Number of points	Compliance criteria
90–100 points "Excellent"	Demonstrates knowledge of the main processes in the subject area being studied; depth and completeness of the issue, logically and consistently expresses his/her own opinion on the problem under discussion, has a command of the conceptual and categorical apparatus, scientific terminology; consistency, coherence of the answer, compliance with the standards of modern scientific language.
80–89 points "Good"	Competent use of scientific terminology in answers; proficiency in the conceptual and categorical apparatus; problematic presentation of the formulated questions; individual errors in the presentation of factual material;

	incomplete presentation of scientific and ascertaining information within the questions; consistency, coherence of the answer, compliance with the standards of modern scientific language.
75–79 points "Satisfactory"	Insufficient use of scientific terminology in answers; insufficient proficiency in the conceptual and categorical apparatus; ability to identify only one of the problems formulated in the questions; errors in the presentation of factual material; superficial knowledge of the subject area; violation of the logic of the answer, the norms of modern scientific language.
0–74 points "Unsatisfactory"	Lack of necessary scientific terminology in the answers; descriptive presentation of the issues discussed, inability to identify and present the problems; gross errors in the presentation of factual material; ignorance of the historiography of the subject area being studied.