«Mukhamedzhan Tynyshpayev ALT University» JSC

Department of Information and communication technologies

APPROVED
Chairman of the AC ALT University
_____ S. Amirgaliyeva

Decision of the Academic Council of ALT University
dated «30» 05 2024 (protocol No.9)

ADMISSION EXAM PROGRAM (INTERVIEW) FORAPPLYING TO POST-GRADUATE EDUCATION PROGRAMS

Educational program
7M06127 –Information Systems, profile direction

Almaty, 2024

Interview questions was discussed and received a positive decision at the meeting of the Department of «Information and communication technologies», Protocol No. 8 of April 18, 2024.

Head of the Department «ICT»_____ **D. Kassymova**

Interview questions was reviewed and recommended at the meeting of the Council of the Institute of «Automation and telecommunications», Protocol No. 5 of April 26, 2024.

Chairman of the CI «AT»_____ **A. Toigozhinova**

CONTENT

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

Admission of foreign citizens to study in to JSC «ALT University named after Mukhamedzhan Tynyshpayev» on paid basis is carried out based on the results of an interview conducted by the admissions committee during the calendar year.

Goals entrance exam (interview) for the Educational program «7M06127 Information Systems», is the definition of theoretical and practical preparedness of an applicant for a master's degree, level of compliance with knowledge, skills and skills to the requirements of master's studies in the field of preparation.

2. Regulations for conducting an entrance exam (interview) for a master's program in a group of educational programs

The duration of the entrance exam (interview) is 30 minutes, during which the applicant is interviewed and answers questions from a commission approved by the President-Rector, consisting of 3 members.

At the applicant's choice, entrance The exam (interview) is taken in Kazakh, Russian or English.

Persons who did not appear at the entrance exam (interview) for a valid reason (illness or other circumstances, confirmed by documents), are allowed to participate on other days in accordance with the approved interview schedule.

The interview is conducted in person/remotely with the mandatory use of video communication. The video recording is stored in the archive for no more than three years.

During the interview process, to clarify the knowledge of the candidate/applicant, additional questions may be asked both on the content of the interview question and on any sections of the subject within the program.

The interview protocols are submitted to the executive secretary of the admissions committee immediately after the completion of the interview.

All controversial issues related to the interview are resolved in accordance with the established legislative procedure of the Republic of Kazakhstan.

3. Interview assessment criteria

The interview procedure is documented in a protocol of the established form, in the form according to Appendix No. in which are fixed questions to incoming and interview results.

Evaluation of candidates/applicants is carried out according to the system adopted by the University according to Table 1. Passing the point is the commission's decision on the sufficient level of candidates/applicants for further training master's degree Each interview decision is signed by the committee members.

Protocol interviews enrolled in the university is kept in their personal files.

Table 1 – Interview assessment criteria

Criteria	Descriptors	Level
Motivation	Argumentation of motives for doctoral studies in the chosen EP and admission to a specific university. Vision of prospects for professional and personal growth upon completion of training	sufficient/not sufficient
Research competence	Possession of the research skills and experience necessary for research activities in a specific subject area	sufficient/not sufficient
Creativity	Non-standard thinking, creative and alternative approaches to solving problems and situational tasks	sufficient/not sufficient
Communication skills	The ability to briefly, representatively, logically, and reasonably express one's point of view, make generalizations and conclusions. Language skills	sufficient/not sufficient
Commission decision		**sufficient/not sufficient**

4. Interview questions

1. Explain the concept of decision support systems (DSS).
2. What mathematical models are used for decision support?
3. What role does artificial intelligence play in decision support systems?
4. Explain the main components of a neural network.
5. What types of neural networks exist and for what tasks are they designed?
6. How does the process of neural network training work?
7. Explain how search engines work.
8. What ranking algorithms are used in search engines?
9. How are machine learning technologies applied in web search systems?
10. Explain the difference between supervised and unsupervised learning.
11. What machine learning algorithms are most popular and for what tasks are they used?
12. What is a neural network and how is it trained?
13. What are the main security threats to information systems?
14. Explain the concept of risk management in information systems.
15. What methods and tools are used to ensure information security?
16. What are business intelligence systems and what are their main components?
17. Explain the concept of data mining and its application in business intelligence.
18. What forecasting methods are used in business intelligence?

19. Explain the difference between SQL and NoSQL databases. In which cases is it preferable to use each of them?

20. Explain the concept of a relational database and its main components.

5. Recommended reading

5.1 Main literature

1. 1. R.I. Mukhamediev, E.N. Amirgaliev. An introduction to machine learning. Almaty, 2022. – 288 p. ISBN 978-601-08-1177-5.

2. MLF_Theory_AI&ML_SummerWorksop_2021_v_2.8.pdf - https://www.dropbox.com/s/beyh0u9xnpcanje/MLF_Theory_AI%26ML_SummerWorksop_2021_v_2.8.pdf?dl=0

3. AI Application Programming by M. Tim Jones. Charles River Media © 2003. ISBN:1584502789.

4. Stuart Russell and Peter Norvig. Artificial Intelligence: A modern approach. Pearson Edition, Inc., Upper Saddle River, New Jersey 07458. 2010. ISBN-10: 0136042597, ISBN-13: 9780136042594

5. Pedregosa F. et al. Scikit-learn: Machine learning in Python //Journal of Machine Learning Research. – 2011. – T. 12. – №. Oct. – C. 2825-2830.

6. Muhamedyev R. Machine learning methods: An overview //CMNT. – 19(6). – 2015. – P. 14-29

5.2 Additional literature

1. Meredith Broussard. Artificial intelligence. The limits of the possible. – Moscow: Alpina non-fiction, 2020. – ISBN 978-5-00139-080-0

2. Gladkov L. A., Kureychik V. V., Kureychik V. M. Genetic algorithms: A textbook. – 2nd ed. – M.: Fizmatlit, 2006. – 320 p. – ISBN 5-9221-0510-8

3. David A. Patterson, John L. Hennessy. Computer Organization and Design: The Hardware/Software Interface, 5th Edition. – Morgan Kaufmann, 2013. – 800 p. – ISBN 0124077269. (English)

4. Van der Plas J. Python for complex tasks. Data Science and Machine Learning = Python Data Science Handbook: Essential Tools for Working with Data. – St. Petersburg, 2017. – 576 p. – ISBN 978-5-496-03068-7.