KAZAKH NATIONAL AGRARIAN RESEARCH UNIVERSITY

DEVELOPMENT PLAN OF THE EDUCATIONAL PROGRAM VETERINARY SCIENCE

FOR THE 2024-2029 ACADEMIC YEARS

Recommended by the academic
faculty "Veterinary Medicine"
protocol No. 5 dated 01/22/2024
Reviewed at an extended meeting
of the department "Clinical Veterinary Medicine"
protocol No. 6 dated 01/15/2024

ALMATY 2024

1. **PASSPORT OF THE DEVELOPMENT PLAN OF THE EDUCATIONAL PROGRAM (EP)**

1	Reasons for developing a development plan for the EP	Strategy and subject of the development plan of the EP in accordance with the educational policy of the Republic of Kazakhstan. Development strategy of the Kazakh National Agrarian Research University until 2029 Strategic development plan "Veterinary" until 2029
2	The main developers of the development plan of the EP	Dean of the Faculty, candidate of Veterinary Sciences, associated professor Alpysbaeva G.E. Head of the Department, candidate of Biological Sciences, Professor Dzhanabekova G.K. Head of the Department, doctor of Veterinary Sciences, Professor Kirkimbaeva Zh.S. Head of the Department, candidate of Veterinary Sciences, Professor Korabaev E.M. Head of the Department, PhD., associated professor Musov A.M. Head of the Department, candidate of Veterinary Sciences, associated professor Makhmutov A.K. Head of the Department, candidate of Veterinary Sciences, associated Professor Alimov A.A. PhD., associated Professor Baimyrzaeva M.S. Candidate of Veterinary Sciences, Professor Koybagarov K.U. Employers: Tashimov N.A., Head of the Biological Safety Department of the "Territorial Inspectorate of the Committee for Veterinary Control and Supervision" in Almaty. Kalkabaev K.A., Head of the Almaty branch of the National Veterinary Reference Center of the Committee for Veterinary Control and Supervision of the Ministry of Agriculture of the Republic of Kazakhstan. Students: Erkenova A.- 4th year student Namet B. – 5th year student
3	Deadlines for the implementation of the development plan of the EP	2024 - 2029 y.
4	Volume and sources of funding	State budget and business contract basis.
5	Expected final results of the implementation of the development plan of the EP	Training of qualified specialists in the field of Veterinary Medicine in accordance with the requirements of national and international standards.

2 ANALYTICAL JUSTIFICATION OF THE PROGRAM

2. 1 Information about the educational program

The content of the educational program is established by the following documents:

- License for educational activities KZ89LAA00031870, date of issue 08/05/2021 (004, 08/05/2021)

State Compulsory Standard of Higher Education. Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated July 20, 2022 No. 2;

2.2 Information about students

The contingent of students is presented in Table 1.

Table 1 – Contingent of students in the EP

Academic year	EP 6B09104- Ветеринария					
	total	including				
		kaz	English	rus	grant	by agreement
2023-2024	192	116	-	76	161	31
2024-2025	409	303	10	96	364	45
Total	601	419	10	172	525	76

2.3 Internal conditions for the development of the EP

To prepare a specialist for the department have modern teaching and laboratory rooms, technical teaching aids, visual and demonstration materials.

To implement the educational program at the faculty there is appropriate material and technical support, including: a veterinary clinic of the faculty, parasitological and obstetric museums of the department, animals of the veterinary clinic and the private sector, as well as specialized classrooms in the following disciplines: veterinary obstetrics and gynecology, veterinary surgery, parasitology and invasive diseases, epizootology and infectious diseases, internal non-communicable diseases with clinical diagnostics, an operating room, an X-ray room, a biochemical laboratory with the appropriate equipment, in particular a hematological analyzer, a biochemical analyzer, an ultrasound machine, a laparoscope, an electrocardiograph, a trinocular microscope with computer support, microscopes, surgical instruments for performing operations, instruments used for diagnosing diseases, etc.

The teaching staff of the department has personal computers and free access to the Internet.

One of the tasks of the faculty of " Veterinary Science " is to develop a joint educational program with leading universities, the implementation of which is aimed at integration into the international scientifically based space through academic exchange of teachers and students. The implementation of academic mobility is carried out with such universities as: Kazakh National University named after Al-Farabi (Almaty), Kazakh Agrotechnical University named after S.Seifullin (Astana), West Kazakhstan Agrarian and Technical University named after Zhangir Khan (Uralsk), Kostanay State University named after A.Baitursynov, Istanbul University (Turkey), Samarkand Institute of Veterinary Medicine (Uzbekistan), Suleyman Demirel University , (Turkey) .

The faculty participates in various programs in terms of academic mobility. At the special invitation of the Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology within the framework of the international agreement, Doctor of Veterinary Sciences, Professor G.D. Ilgekbaeva, Candidate of Veterinary Sciences, Professor Zh. Espanov, Doctor of Veterinary Sciences, Professor Dzhulanov M.N., Candidate of Veterinary Sciences, Professor Maulanov A.Z., Candidate of Veterinary Sciences, Associate Professors Orynhanov K.A., Tuganbai A.A. gave lectures .

The following countries have delivered lectures under the program of the International Summer School 2023-2024: Aniila Durrani - PhD, Professor, Lahore University of Veterinary Medicine and Animal Husbandry, Pakistan (2023), Corina Pascu - PhD, Associate Professor, King Michael I University of Life Sciences, Timisoara, Romania (2023), Xiaofei Shan - PhD, Professor, Lanzhou Institute of Animal Husbandry and Pharmaceutical Sciences, China (2023), Iancu Ionica - PhD, Associate Professor, King Michael I University of Life Sciences, Timisoara, Romania (2023), Ugur Uslu - Doctor of Veterinary Sciences, Professor, Selcuk University, Turkey (2023), Corina Pascu - PhD, Associate Professor, King Michael I University of Life Sciences, Timisoara, Romania (2023), Ulas Akaroz - - PhD., Associate Professor of the Kyrgyz-Turkish Manas University (2023), Osman Erganis - PhD., Professor, Academician of Selcuk University, Konya, Turkey (2023), Denisenko T.E. - Associate Professor of the Moscow State Academy of Veterinary Medicine and Biotechnology named after K. I. Skryabina, Russian Federation (2023), Dominika Grzybowska PhD Doctor, Professor of the Department of Internal Medicine. University of Warmia and Masuria, Olsztyn, Poland (2024), Lineva Anna Mikhailovna - Veterinary nutritionist, DVM, PhD - Doctor of Veterinary Medicine, LMU University (Munich), Germany (2024)

In the 2024 -2025 academic year, a 2nd year student is studying at the Estonian University of Life Sciences under academic mobility during the period (Estonia, Tartu) 01.09.2024 - 02.02 .2015

2.4 Characteristics of the surrounding society

The priority direction in the development of the educational program is training focused on the personality of the student, revealing his individual abilities, forming the student into an active and interested participant in the educational process.

The basis of the educational environment is its social component, in relation to the EP traditions and image of KazNARU, mutual responsibility, moral and emotional climate; social support of students, extracurricular activities (creative teams, sports sections, scientific communities, etc.). One of the key components is also the intellectual and developmental environment: modern technologies of developmental learning (interactive teaching methods), a system of electives (business games, excursions), a system of elective courses in various areas of educational programs for acquiring knowledge on a particular topic, a system of intellectual competitions of various levels (subject and interdisciplinary Olympiads, competitions, tournaments, intellectual marathons, games, etc.), a system of support for gifted students.

All components of the educational environment structure are open, there is an opportunity to realize oneself, which leads to increased motivation for educational activities, and develops communication skills.

2.5 Information about the teaching staff implementing the EP

Implementation of educational programs " Veterinary Science" is carried out by a teaching staff of 123 people.

The teaching staff of the departments, represented by:

- with academic degrees and titles (awarded by the Higher Attestation Commission of the Republic of Kazakhstan, the USSR - number/% - 86/69.9%
- professors (awarded by the Higher Attestation Commission of the Republic of Kazakhstan, the USSR) number/% - 17/13%
- Doctors of Science (awarded by the Higher Attestation Commission of the Republic of Kazakhstan, the USSR) number/% - 26/21%
- candidates of sciences, associate professors (awarded by the Higher Attestation Commission, no./% - 60/48%
- members of other public academies of sciences - 1
- number of winners of the state grant "Best number of university teachers" - 10

The share of teaching staff conducting classes in the Kazakh language is (persons/%) - 121/98.3%, the average age of the teaching staff with academic degrees and titles is 49 years. The faculty's degree holders rate is 75%.

Department staff annually undergo advanced training courses at leading scientific centers of this profile in the Russian Federation, Ukraine and foreign countries (Germany, China, Poland).

The teaching staff publishes scientific articles not only in industry journals of the Republic of Kazakhstan, but also in journals with a high impact factor included in the Web of Science and Scopus databases.

2.6 Characteristics of the achievements of the EP

The achievements of the educational program include - training of target specialists, scientific and pedagogical personnel and conducting scientific research based on contracts concluded with specialized research institutes and experimental farms. These are organizations such as: KazNRVI LLP, Baiserke Agro LLP, KazAgroInnovation JSC; State Institution "Cynological Center of the Ministry of Internal Affairs of the Republic of Kazakhstan" in Almaty, Aman-Agro LLP in Atyrau, the laboratory of antiviral protection of the scientific and production center of microbiology and virology, State Enterprise "Veterinary Department of the Akimat of Zhambyl Region", State Enterprise on the Right of Economic Management " Veterinary Service " of the Department of Agriculture and Veterinary Medicine of Shymkent, TOO "Amiran" , TOO Veterinary Clinic "U Lukomorya", "Center for Veterinary Medicine",

State Enterprise" Veterinary Service of the Turkestan Region", State Enterprise " Veterinary Department of the Akimat of Taldykorgan Region", TOO Veterinary Clinic " Talisman ", State Enterprise "Almaty Zoo", Municipal State Enterprise on the Right of Economic Management "City Veterinary Service" of the Department of Entrepreneurship and Investment of Almaty City, Scientific and Production Center "Univet", Almaty Regional Branch of the RSE on the Right of Economic Management "Republican Veterinary Laboratory" of the CVCS of the Ministry of Agriculture of the Republic of Kazakhstan, JSC "Alatau-Kus", TOO "Tastak", TOO "Zhana-Akbulak", TOO "Aruzhan" BN, TOO "Nur-Asem-Vet", State Institution Territorial Inspectorate of CVCS of the Ministry of Agriculture of the Republic of Kazakhstan, etc.

In order to ensure the acquisition of practical experience and skills in the specialty, the management of the EP provides for the implementation of practical training during the period of training of specialists: educational at the departments of the disciplines of animal and bird anatomy, veterinary microbiology and immunology - 5 credits, industrial practice is carried out on the basis of contracts with employers (according to Module 9. Non-infectious and infectious pathologies of animals) - 15 credits. Industrial practice in the 5th year is carried out dually.

For conducting laboratory and practical classes, as well as dual training, branches have been created on the basis of the faculty: in the scientific and production center of microbiology and virology, TOO NPP"Antigen", Almaty branch of the RSE on the right of economic management "National reference center for veterinary medicine" of the CVCS of the Ministry of Agriculture of the Republic of Kazakhstan, "Almaty regional territorial inspectorate" of the Ministry of Agriculture of the Republic of Kazakhstan, educational and experimental farm "Agrarian University of the village of Saimasai", TOO "UNC Baiserke Agro", veterinary clinic "Aibolit", Patronage veterinary center "Jaidaq", TOO "Baiserke-Agro", "Cynological center of the Ministry of Internal Affairs of the Republic of Kazakhstan" in Almaty, farm "Khabit", IE "Barys".

For the implementation of the EP, international cooperation is carried out: Lanzhou Veterinary Research Institute (PRC); University of Applied Sciences (Turkey). Within the framework of the Erasmus project: Banat University of Agricultural Sciences and Veterinary Medicine (Romania), Suleyman Demirel University (Turkey). Program By exchange “The Effects of probiotics against calf diarrhea and the importance of the probiotics in terms of food safety”.

Results: bilateral visits to universities by teachers and students, exchange of experience, joint scientific research, preparation of a patent.

Scientific research by scientists implementing the EP is carried out in priority areas of agricultural science development, which are included in the Republican programs and have both theoretical and practical significance. The department staff conducts scientific research on **the following funded projects:**

1. MES RK "Science of Life and Health" AP19674808 "Study of genetics and creation of genetic passports of Kazakhstan cattle of local breeds using whole-genome sequencing" 2023-2025. In the amount of 98,529,636 thousand tenge.
2. Competition for grant funding for young scientists under the project "Zhas Galym" for 2022-2024 "Monitoring hidden genetic defects in breeding animals of meat direction" 2022-2024. In the amount of 18,889,435 thousand tenge.
3. Competition for grant funding for research by young scientists under the Zhas Galym project for 2022-2024. AP14972822 "Development of methods for determining haplotypes HH2, HH6, JH1, JH5 in cattle and studying the frequency of lethal alleles in the study population" 2022-2024. In the amount of 18,935,282 thousand tenge.
4. Grant funding from the Ministry of Science and Higher Education of the Republic of Kazakhstan No. 284/30-22-24 dated 18.10.2022. Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan. "Study of the ecogenomics of the microbiome of the Kazakh horse using the NGS sequencing method" 2022-2024.
   In the amount of 77,343,942 thousand tenge.
5. MES RK AP19677892 "Assessment and conservation of genetic diversity of Kazakh horses using holistic sequencing" 2023-2025. In the amount of 96,807,500 thousand tenge.

6. Competition for grant funding for young scientists under the project "Zhas Galym" for 2022-2024 AP22682970 "Study of SNP polymorphisms in dairy cows associated with the size of somatic networks in milk" 2024-2026. In the amount of 29,981,012 thousand tenge.
7. Competition for grant funding for scientific and (or) scientific and technical projects for 2023-2025 (Ministry of Education and Science of the Republic of Kazakhstan) AP19675939 "Development of an intranasal nanovaccine against highly pathogenic avian influenza" For the amount of 99 000 589.5 thousand tenge.
8. Competition for grant funding for scientific and (or) scientific and technical projects for 2023-2025 (Ministry of Education and Science of the Republic of Kazakhstan) AP19680565 "Development of an experimental model of infection in goats using Rhodococcus equi containing pVAPN as a model of Rhodococcus infection for foals" In the amount of 98,304,998.25 thousand tenge.
9. Competition for grant funding for scientific and (or) scientific and technical projects for 202 2 - 2024 years MES RK) AR 14972860 "Development of regulatory and technical documentation for an experimental live monovalent vaccine against trichophytosis of cattle". In the amount of 18,640,387 thousand tenge.
10. Competition for grant funding for young scientists under the project "Zhas Galym" 2024 AP22682870 "development of operational methods for animal diagnostics" 2022 -2024. In the amount of 29,986,293 thousand tenge.
11. GF MES RK AP 19679862 "Development and pharmacotoxicology of new feed additives based on active shungites of the Bakyrchik deposit and veterinary and sanitary assessment of poultry products when using them" 2023-2025 in the amount of 98,329,917 thousand tenge.
12. Grant funding for young scientists AR 19577014 "Develop methods for reducing radioactivity in the body of animals and livestock products" 2023-2025 in the amount of 72,426,089 thousand tenge.
13. Competition for grant funding for scientific and (or) scientific and technical projects for 2023-2025 (Ministry of Education and Science of the Republic of Kazakhstan). "Development of a domestic probiotic drug based on associated strains of lactic acid bacteria to improve the immune system in young farm animals."In the amount of 98,106,000 thousand tenge
14. Competition for grant funding for young scientists under the project "Zhas Galym" for 2022-2024. AP19177538 "Development and pharmacotherapeutic justification of a walnut preparation for the treatment and prevention of dyspepsia in young animals." In the amount of 23,559,403 thousand tenge.
15. State Fund of the Ministry of Education and Science of the Republic of Kazakhstan AR19680173 “Development and justification of the safety technology of synbiotics for aquaculture based on Kazakhstani minerals (zeolite, vermiculite) and a probiotic strain (E.coli 39-SN)” 2023-2025. In the amount of 27,737,521 thousand tenge.
16. State Fund of the Ministry of Education and Science of the Republic of Kazakhstan AR 19677719 “Development of a domestic probiotic drug based on associated strains of lactic acid bacteria to enhance the immune system in young farm animals” 2023-2025. In the amount of 98,106,301 thousand tenge.
17. State Fund of the Ministry of Education and Science of the Republic of Kazakhstan “Development of a subunit vaccine against avian metapneumovirus infection ” 2024-2026. In the amount of 100,500,000 thousand tenge.
18. State Fund of the Ministry of Education and Science of the Republic of Kazakhstan "Development of an associated biological drug for the treatment and prevention of dermatomycosis in cattle " 2024-2026. In the amount of 119,705,597 thousand tenge
19. State Fund of the Ministry of Education and Science of the Republic of Kazakhstan “ Study of the distribution of tick species and molecular identification of new tick-borne pathogens in the

regions of the Republic of Kazakhstan" 2024-2026. In the amount of 119,113,707 thousand tenge.

20. Grant funding for young scientists " Develop accelerated methods for diagnosing emphysematous carbuncle in animals" 2024-2026. In the amount of 29,986,293 thousand tenge.

The development plan of the educational program " Veterinary Medicine" was developed based on the requests of employers and students. The main goal of the development plan of the educational program is to create an educational environment that promotes the formation of a self-developing and self-actualizing personality based on the introduction of a competency-capable approach in the educational and upbringing process.

3 MAIN GOALS AND OBJECTIVES OF THE EP DEVELOPMENT PLAN

The development plan of the educational program "Veterinary Science" was developed based on the requests of employers and students. The main goal of the development plan of the educational program is to create an educational environment that promotes the formation of a self-developing and self-actualizing personality based on the introduction of a competency-capable approach in the educational and upbringing process.

To achieve the goal, it is necessary to solve the following tasks:

- Creation of an innovative educational environment;
- Expansion of the educational space;
- To orient the educational program towards the scientific research activities of students;
- To ensure a level of education that meets modern requirements and practical needs;
- Development of human resources;
- Strengthening language training of teaching staff through mandatory attendance of foreign language courses created both at the university and outside it;
- Expansion of international cooperation of the university with universities in the near and far abroad within the framework of scientific projects and academic mobility of students and teaching staff.

Quantitative and qualitative expression of expected results of the development of the EP

№ p/n	Targeted indicators	Unit of measurement	Current plan, 2024	As planned				
				2025	2026	2027	2028	2029
1	Average annual number of students in the specialist program	Unit	409	430	455	470	490	510
5	Qualitative academic performance of students (proportion of students with "good" and "excellent" grades) - specialty	%	90 %					
6	The share of employed graduates in the first year after graduation: - specialty	%	-	-	-	-	80	85
7	The share of full-time teaching staff with academic degrees and titles	%	100 %					
8	Number of faculty members attracted from abroad	man	28	30	31	33	35	35

9	The proportion of teachers who have undergone advanced training	%	70	75 %	80 %	90 %	95 %	100 %
10	Number of joint educational programs developed with the participation of foreign universities: - specialty	unit	-	1	1	1	1	1
11	Number of basic and specialized disciplines in English - specialty	Unit	26	28	30	30	34	34
13	The proportion of those who studied abroad for at least one academic period during the entire period of study - specialty	%	1	3	4	5	5	7

Measures to reduce the impact of risks for the EP

The successful implementation of an educational program can be influenced by various types of risks and, as a result, preventive measures have been developed to reduce them.

- attracting a contingent of students on a fee-paying contractual basis;
- to intensify the work of the teaching staff on the development of electronic educational publications in the state language and their introduction into the educational process;
- intensify work to improve the qualifications of teaching staff in research institutes and universities abroad to implement academic mobility;
- take an active part in competitions announced by the Ministries of the Republic of Kazakhstan and international organizations to receive grants for funded research projects;
- timely planned purchase of modern equipment and constant replenishment of the stock of devices and instruments, functioning of the medical and diagnostic center at the department.

4 LIST OF ACTIVITIES OF THE IMPLEMENTATION PLAN OF THE EP

No.	Events	Deadlines implementations
1	Improving the specialty program by taking into account the opinions of potential employers	2024 -2029
2	Drawing up a plan for publishing textbooks, teaching aids and methodological recommendations for educational programs	2024 -2029
3	Active implementation of academic mobility students and teaching staff	2024 -2029
4	Expanding scientific cooperation and partnerships with leading foreign universities and research centers, attracting leading foreign scientists to carry out scientific research and give lectures to students	2024 -2029
5	Submission of applications for the competition for scientific projects of the Ministry of Agriculture, the Ministry of Education and Science of the Republic of Kazakhstan, etc., as well as those carried out by order of regional agricultural production cooperatives and business entities	2024 -2029
6	Publication of scientific articles in journals included in the Web of Science and Scopus databases, in scientific journals with an impact factor	2024 -2029
7	Accreditation for the EP "6B09104 Veterinary Science "	2024

8	Participation in the national ranking of educational institutions among universities of the Republic of Kazakhstan	annually
9	Preparation and participation of students in the Republican Olympiads in EP 6B09104 – Veterinary science	20 24 -20 29
10	Conclusion of agreements with specialized enterprises for the completion of industrial and research internships by students	20 24 -20 29
11	Updating the material and technical base of laboratories	20 24 -20 29
12	To intensify cooperation with foreign educational organizations on the subject of harmonizing modules and to begin developing and implementing joint educational programs	20 24 -20 29

5 MECHANISM FOR IMPLEMENTING THE EP DEVELOPMENT PLAN

To implement a high-quality educational program, the faculty's teaching staff develops catalogs of elective disciplines with the direct participation of employers and students. The department's teaching staff will actively implement innovative technologies for teaching and science through academic mobility with domestic and foreign partner universities and research institutes. Ensuring a high proportion of employed graduates of the educational program by organizing and holding an annual "Career Week", "Job Fair", industrial practice and internships with the involvement of employers.

The teaching staff and students must participate in international educational programs, participate in the competition for the allocation of grants for travel to participate in scientific conferences (seminars, congresses, conventions) and scientific internships.

6 ASSESSMENT OF SOCIAL AND ECONOMIC EFFICIENCY OF THE IMPLEMENTATION OF THE EP DEVELOPMENT PLAN

As a result of the implementation of the development plan for the EP, it is expected that the following socio-economic effects will be achieved:

- improving the quality of professional education and, as a consequence, the competitiveness of specialists in the field of veterinary medicine;
- training graduates who meet the needs of potential employers;
- increasing the role of employers in training professional personnel;
- expanding opportunities for professional self-realization of young people;
- updating the educational and material base (educational, laboratory, computer and technological base that meets modern requirements and standards).

GRADUATE MODEL

	6B09104-Veterinary
Be able to:	conduct diagnostics, differential diagnostics, treatment and prevention of animal diseases; veterinary and sanitary examination of products of animal and plant origin; postmortem examination and draw up a conclusion on the cause of death of an animal, bird and fish, draw up a protocol of pathological examination; correctly use medical-technical and veterinary equipment, tools and equipment, conduct educational and upbringing work:
Know and understand:	classification of diseases, specifics of their etiology and symptoms, modern methods of intravital and postmortem diagnostics and differential diagnostics, new effective methods of prevention and treatment, fundamentals of technology and hygiene in the production of livestock, poultry and fish products; fundamentals of biosafety; fundamentals of food safety classification of diseases, the specifics of their etiology and symptoms, modern methods of intravital and postmortem diagnostics and differential diagnostics, new effective methods of prevention and treatment, fundamentals of technology and hygiene in the production of livestock, poultry and fish products; fundamentals of biosafety; fundamentals of food safety;
Be competent in the following matters:	In determining specific morphological, physiological and cytochemical features of the structure of an animal organism in species, breed and age aspects; in studying the features of biological properties of pathogens, the infectious process, identifying the isolated culture and making a diagnosis; organizing preventive, quarantine and restrictive veterinary and sanitary measures; conducting epizootological examinations, diagnosing infectious diseases and conducting bacteriological, virological and serological studies for infectious and parasitic diseases, disinfection and deratization; veterinary and sanitary supervision during procurement, production, sale, storage and export, import and transit of animals, products and raw materials of animal origin; conducting laboratory, pathological, pathohistological studies, analysis and interpretation of research results, pathological autopsy of animal corpses, drawing up an autopsy report; in mastering modern methods of clinical, laboratory and special studies of non-communicable diseases; in matters of the mechanisms of action of various groups of drugs; in matters of application of innovative methods of diagnostics, treatment and prevention of obstetric-gynecological and surgical diseases of animals, in matters of effective application of modern methods, devices and equipment in solving problematic issues in the field of veterinary medicine.