**Kazakh National Agrarian Research University**

**EDUCATIONAL PROGRAM DEVELOPMENT PLAN**

**TECHNOLOGY OF PRODUCTION OF ANIMAL PRODUCTS**

**FOR 2024-202-2028 YEARS**

**Almaty, 2024**

**CONTENT**

|  |  |  |
| --- | --- | --- |
| № | Component name | Стр. |
| 1 | Passport of the educational program development plan (EP) | 3 |
| 2 | Analytical justification of the program | 3 |
| 3 | Characteristics of the problems the development plan of the EP aims to address | 6 |
| 4 | Main goals and objectives of the educational program development plan | 7 |
| 5 | Expected final results of the implementation of the educational program development plan | 8 |
| 6 | Measures to reduce the impact of risks on the EP | 9 |
| 7 | List of activities for the implementation of the EP development plan | 10 |
| 8 | Mechanism for the implementation of the educational program development plan | 10 |
| 9 | Evaluation of the socio-economic effectiveness of the implementation of the educational program development plan | 11 |
| 10 | SWOT analysis | 12 |
| 11 | Graduate model | 12 |

**PASSPORT OF THE EDUCATIONAL PROGRAM DEVELOPMENT PLAN**

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| 1 | The grounds for developing a development plan for the OP | The strategy and themes of the educational program development plan are based on the requests of employers in accordance with the educational policy of the Republic of Kazakhstan, the strategic development plan of the Department of "Animal Engineering and Biotechnology," and the development strategy of the Kazakh National Agrarian Research University for 2024-2028. |
| 2 | The main developers of the OP development plan | Head of the Department, PhD, Professor Kulataev B.T.,  PhD, Senior Lecturer Baymazhi E.B.  Employers:  Chairman of the Board of the LLP "Kazakh Research Institute of Animal Husbandry and Feed Production" RK A. Torekhanov  Student N. Turalyk  Graduate A. Abdybek |
| 3 | Deadlines for the implementation of the OP development plan | 2024 – 2028 y. |
| 4 | Volume and sources of financing | The State budget and the contractual framework. |
| 5 | Expected final results of the implementation of the OP development plan | - training of highly qualified specialists  - to carry out organizational and technological management of animal husbandry of the department (farm, agricultural site);  - to develop draft tasks on animal husbandry and ensure their implementation;  - improving the quality of education;  - to promote the employment of graduates. |

**1. 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**

**KZ42LAA00006720, March 25, 2016, Appendix No. 009, dated March 27, 2019 (bachelor's degree), Appendix No. 010, dated July 5, 2019 (master's degree); KZ89LAA00031870, dated August 5, 2021 (No. 006, January 26, 2022), ACQUIN, September 27, 2021 - September 30, 2028.**

**State mandatory educational standard for all levels of education (Order of the Minister of Education and Science of the Republic of Kazakhstan, October 31, 2018, No. 604. Registered by the Ministry of Justice of the Republic of Kazakhstan on November 1, 2018, No. 17669).**

**In the bachelor's program, the educational trajectory is: No. 1 "Technology of Livestock Products Production."**

**In the master's program (scientific-pedagogical and professional directions), the educational trajectory is: No. 1 "Technology of Livestock Products Production."**

**In the doctoral program (scientific-pedagogical direction), the educational trajectory is: No. 1 "Technology of Livestock Products Production."**

2.2 Information about the students

The department trains specialists under the following educational programs (EP):

Technology of Livestock Products Production (TLPP) at three levels (6B08201, 7M08201, and 8D08201).

The student body in the "Technology of Livestock Products Production" EP consists of 78 students, 3 master's students, and 10 PhD doctoral students.

The educational programs "Technology of Livestock Products Production" and "Biotechnology" were developed in accordance with the classifier of higher and postgraduate training directions and are aligned with the Dublin descriptors and the European Qualifications Framework.

The educational programs "Technology of Livestock Products Production" take into account the demands of employers due to the growing need for specialists who possess general cultural, professional, and specialized competencies in livestock product production, contributing to their social mobility and demand in the labor market.

The unique features of the implemented programs lie in the formation and development of socially-professional, practice-oriented competencies, which allow combining socio-personal and professional competencies to solve tasks in the fields of animal husbandry and biotechnology.

Additional educational programs (minor) are being introduced to develop entrepreneurial skills among students, which have undergone expertise and are included in the Register of educational programs in higher and postgraduate education. Each year, the educational programs participate in the ranking of educational programs conducted by the National Chamber of Entrepreneurs "Atameken."

2.3 Internal conditions for the development of the EP

For the training of bachelor's, master's, and doctoral students, the department is equipped with modern classrooms, laboratory rooms, technical teaching aids, visual and demonstration materials.

The Department of "Animal Engineering and Biotechnology" has a classroom fund, which includes teaching laboratories, lecture halls, and laboratory classrooms in academic building No. 10, where laboratory and practical sessions are conducted (rooms 129, 133, 134, 209, 211, 212B, 213B, 214, 219). Among them: 1 lecture hall, 1 computer class – No. 209, "Information and Consulting Information Center named after Z. Tamshibaeva," dedicated to conducting classes and performing scientific work for master's and doctoral students.

There are four teaching laboratories:

№133 "Feed Nutritive Value Evaluation", №212B "Animal Biotechnology", №214 "Safety and Quality Expert Evaluation of Products and Animal Raw Materials." The teaching laboratories are equipped with specialized equipment and instruments, such as: Laminar box, drying cabinet SPU-80, fume hood Lactan-1-4M milk analyzer to determine five key indicators (protein, SOMO, density, and mass fraction of added water in the sample). Refractometer IRF454B2M for measuring the concentration of solutions using the refraction phenomenon.

Mini-centrifuge and 12-section laboratory centrifuge for fast execution and separation of liquids.Electronic scales Scout PRO for weighing loose substances. Binocular microscopes, transilluminator, endometrial laparoscopic complex. Other specially equipped classrooms and practice areas are decorated with thematic stands and visual materials, allowing students to develop practical skills and master laboratory, scientific, and research methods.

The department is well-equipped with office equipment. Four classrooms are equipped with built-in multimedia projectors, interactive whiteboards, and screens, including a mobile screen (rooms 134, 211, 213, 219).

The sanitary condition of the classrooms, laboratories, and offices meets the required regulatory standards. Each classroom has a passport indicating the number of seats, inventory, and the area it occupies.

For individuals with limited mobility, accessibility paths are provided, with stairways equipped with ramps and lifts, and toilet cabins are available. Special attention is given to computer assistive technologies.

The educational programs are fully provided with teaching and methodological complexes for the disciplines (100%).

The faculty members of the department have personal computers and free access to the Internet.

One of the tasks of the Department of "Animal Engineering and Biotechnology" is to develop joint educational programs with leading universities aimed at integrating into the international scientifically-based space through academic exchange between faculty members and students. Academic mobility is carried out with universities such as Warsaw-Masurian University (Poland), University of Pahang (Malaysia), and the Russian State Agrarian University – Timiryazev Moscow Agricultural Academy (Russia). Foreign scholars are developing a teaching and methodological complex for courses in English (Wageningen).

Involving practicing professionals in the educational process helps integrate theory with practice and assists in the rapid adaptation of graduates to the professional environment.

2.4 Characteristics of the surrounding society

A priority direction in the development of the educational program is student-centered learning, which reveals the individual abilities of students, master's, and doctoral students, transforming them into active and engaged participants in the educational process.

The foundation of the educational environment is its social component, specifically the traditions and image of KazNAIU, mutual responsibility, and the moral-emotional climate; social support for students, extracurricular activities (creative teams, sports sections, scientific communities, etc.). One of the key components is also the intellectually stimulating environment: modern developing teaching technologies (interactive methods), a system of electives (business games, excursions), a system of elective courses across various educational program directions to acquire knowledge on specific topics, a system of intellectual competitions at various levels (subject and interdisciplinary Olympiads, competitions, tournaments, intellectual marathons, games, etc.), and a support system for gifted students.

All components of the educational environment are open, offering opportunities for self-realization, which leads to increased motivation for academic activities and helps develop communication skills.

2.5 Information about the teaching staff implementing the OP

Currently, the department has 16 teachers: 4 doctors of Sciences, 7 candidates of Sciences, 2 doctors of PhD and 3 masters. The rate of settling down is 80%.

Employees of the department have the opportunity to improve their skills in leading research centers of the Republic of Kazakhstan and abroad.

The faculty publishes scientific articles not only in industry journals of the Republic of Kazakhstan, but also in journals with an impact factor входincluded in the WebofScience and Scopus databases.

***2.6 Characteristics of the OP's achievements***

The achievements of the educational program include training targeted specialists, scientific and pedagogical personnel and conducting scientific research on the basis of concluded contracts with specialized research institutes and LLP. The Department works closely with KAZNIIZHIK, which is under the university's trust management, which contributes to the integration of scientific and scientific-technical activities into the educational process. Their employees are also involved in conducting classes and master classes.

The research work of the Department of "Zooengineering and Biotechnology" is determined by the active participation of teaching staff in fundamental and applied research, improving the level and quality of scientific experiments, participating in competitions and grants in science, preparing courses, participating in theoretical and scientific conferences, creating scientific schools and directions, publishing scientific papers. Currently, the department's scientists conduct research projects in the following areas:

Program-specific financing Program BR21882201 - "Improvement of meat productivity of fat-tailed sheep by new methods of breeding, genetics and biotechnology" 2023-2025 Kazakh Research Institute of Animal Husbandry and Feed Production LLP - head of the topic, Candidate of Agricultural Sciences, Professor Kulatayev B. T.

- Grant financing Project AR14869351-Study of multiple pregnancy and its inheritance in Kazakh fat-tailed sheep by assessing the genetic polymorphism of the FECB, GDF9 and BMP15 fertility genes, 2023-2025 Kazakh Research Institute of Animal Husbandry and Feed Production LLP - head of the topic, Candidate of Agricultural Sciences, Professor B. T. Kulatayev

During the period (2018-2020), 5 research projects were carried out, with a total amount of funding – 35 million tenge, and research was carried out by industry, business and other development institutions (hozdogovoroda, BP 019, one-time services) - 10.2 million tenge.

1. "Improvement of the gene pool of Degeres, Saryarkin (intra-breed Zhanaarkin type) and Edilbay kurdyuk sheep breeds" Project of the Ministry of Agriculture of the Republic of Kazakhstan PCF On the scientific and technical program: "Development of effective breeding methods by animal husbandry branches"

According to the project: "Development of effective methods of breeding in sheep breeding for breeds Degeresskaya, Saryarkinskaya, edilbayskaya and Romney-marsh "Task:" To develop breeding programs for improving economically useful traits of sheep in the meat-fat direction of productivity" The amount of financing is 7million tenge. Supervisor: Academician of the National Academy of Sciences of the Republic of Kazakhstan T. S. Sadykulov.

2. "Development of modern breeding methods for predicting the genotype of fat-tailed sheep breeds" Project of the Ministry of Education and Science of the Republic of Kazakhstan under the budget program: 217 "Development of science" 102 "Grant financing of scientific research" The amount of financing is 7.5 million tenge.Head: Academician of the National Academy of Sciences of the Republic of Kazakhstan T. S. Sadykulov Co-head: Doctor of Agricultural Sciences Professor Sh. R. Adylkanova.

3. Under the subprogram of the scientific and technical program "Development of effective technologies in the meat cattle breeding industry", under the section "Development of effective technologies in breeding meat cattle breeding" According to the budget program 267 "Increasing the availability of knowledge and scientific research", according to the budget subprogram 100 "Program-targeted financing of scientific research and activities", according to the specifics 156 "Payment for consulting services and research" for 2018-2020, according to the scientific and technical program "Development of intensive technologies in animal husbandry", the amount of funding is 7 million tenge.Supervisor - Professor Nurgazy K. Sh.

4. No. AP05133074 "Intensification of sheep production based on the study of physiological, biochemical and molecular-genetic features of the formation of meat and wool productivity of sheep in the conditions of deserts and semi-deserts of the south and south-east of Kazakhstan" Under the budget program: 217 "Development of Science"**(**Committee of Science of the Ministry of Education and Science of the Republic of Kazakhstan, grant financing agreement No. 289 dated March 29, 2018). The amount of funding is 9.0 million tenge.Supervisor-Professor Islamov E. I.

5. "Development of effective methods of breeding in sheep breeding for Degeres, Saryarkinskaya, Yedilbayskaya and Romney-Marsh breeds" under the scientific and technical program "Development of effective methods of breeding in livestock sectors" for 2018-2020 under the budget program 267 "Increasing the availability of knowledge and scientific research" under subprogram 101 " Program-targeted financing of scientific research and events". The amount of financing is 4.5 million tenge.Supervisor-Professor Islamov E. I.

6. "Grant financing of scientific research at the expense of the republican budget". "Improving the immunity and productivity of broiler chickens through the use of the feed additive "Albit Bio". Dates: 2021. Head: Alpeysov Sh. A. Funding volume: 5.5 million tenge.

7. "Program-targeted financing of scientific research and events". "Study, scientific substantiation and development of a program for breed zoning of honey bee breeds, taking into account the natural and climatic zones of the Republic of Kazakhstan".2021-2023 years. Head: Nuralieva U. A. Amount of financing: 46.0 million tenge.

**3.CHARACTERISTICS OF THE PROBLEMS THAT THE OP DEVELOPMENT PLAN IS AIMED AT SOLVING, AND JUSTIFICATION FOR THE NEED TO SOLVE THEM**

The difference and uniqueness of this OP is that there is a good material and technical base that meets modern requirements. These are the availability of specialized laboratories, the availability of highly qualified scientific and pedagogical staff (the staff retention rate is 51 %, the availability of joint educational programs (double degree programs); the possibility of obtaining an international diploma, the presenceof representatives of production in the teaching staff, affordable training costs, and the availability of training paths that are in demand on the labor market.

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| **Criteria** | **Problem** | **Analysis of the causes of** |
| education content | Low proportion of teachers who implement specialized disciplines in foreign languages | -strengthening the language training of teaching staff by mandatory attendance of foreign language courses created both at the university and outside it. |
| Organization of the educational-process and technology of training | -a low proportion ofonline courses in the disciplines of higher and postgraduate education curricula | Creating an innovative educational environment by involvingteachers in the development of online courses. |
| Low proportion of international students. | Development of partnership relations with universities of far and near abroad, advertising of educational programs through social networks. |
| Content, planning and conducting research | Low number of publications of university scientists in journals included inrating foreign journals | Involvement of students, undergraduates, doctoral students and young scientists in researchactivitieswith subsequent publication of research results in foreign scientific publications with a non-zero impact factor; |
| Advanced training of teaching | staff Low proportion of teachers who have completed international internships | * planning of internships for undergraduates and doctoralstudents at leading foreign universities; * training of doctoral students and undergraduates in partnership with leading foreign universities. |

**4. MAIN GOALS AND OBJECTIVES OF THE DEVELOPMENT PLAN WITH INDICATION OF TERMS AND STAGES OF ITS DEVELOPMENT**

The development plan of the educational program "Biotechnology "was developed in accordance with the Development Program of the NAO" Kazakh National Agrarian Research University".

The goals and objectives of the educational program are formulated taking into account the requirements and requests of potential consumers, and based on the assessment of the demand for the educational program, which are determined by the interests of potential employers, applicants, the potential of the university, the requirements of the state and society as a whole. The educational program "Technology for the production of animal products" is aimed at пtrainingу highly qualified personnel with modern technologies for the production of animalproducts, educational institutions and scientific organizations based on the integration of education, research and production.

***Main goals and objectives***

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| 1. | Training of highly sought-after personnel with higher and postgraduate education who meet the needs of the domestic and foreign labor market | Planning the work of the department in accordance with the criteria and requirements for assessing the quality of education of state and international accreditation centers (NCAOKO, NAAR, ACQUIN,RPA) |
| 2. | Interaction of the university with employers to assess the competencies of university graduates, satisfaction with the quality of graduate training | - involvement of employers in the development and implementation of the educational program;  - conclusion of contracts for conducting practical classes on the basis of leading food enterprises;  - increase in the share of dual training system (up to 3-4 disciplines up to 2028 years) at leading enterprises |
| 3. | GraduationTraining of competitiveof competitive specialists with proficiency in a professional foreign language | - an increase in the proportion of students studying for at least one semester in foreign universities in a foreign language (from 5 to 10 to 202.33 years);  - study of a foreign language by teaching staff of the department;  - participation in international competitions for language internships of teaching staff abroad. |
| 4. | Increase of research potential | : - active participation of scientists in state competitions for grant funding of research projects;  - involvement of students in research activities with subsequent publication of research results in foreign scientific publications with a non-zero impact factor |

**5EXPECTED FINAL RESULTS OF THE IMPLEMENTATION OF THE DEVELOPMENT PLAN OF THE OP**

- improving the quality of educational programs and improving the content and technologies of training and education;

- updated content of the OP, taking into account the proposals of employers and the demand of the domestic and global labor market;

- involvement of students in jointresearchprojects of the university, department;

- пtraining graduates with deep theoretical knowledge and practical skills in their professional activities;

- positive assessment of the content of the OP by employers and students.

- high demand for graduates of the specialty in the labor market, employment.

**6MEASURES TO REDUCE THE IMPACT OF RISKS FOR THE OP**

The successful implementation of an educational program may be affected by various types of risks, and as a result, preventive measures have been developed toreduce them:

* Create favorable conditions for teaching staff to work. Release the teaching staff from additional workloads.
* Development of a comprehensive career guidance plan for schools and colleges in Almaty and other regions. Active work in social networks. Organization of joint scientific and educational work with students, including conducting masterclasses in schools and colleges;
* attracting a contingent of students on a fee-based contractual basis;
* step up the work of teaching staff to develop e-learning publications in the state language and introduce them into the educational process;
* step up efforts to improve the skills of teaching staff in research institutes and Universities of non-CIS countries for the implementation of academic mobility;
* take an active part of the teaching staff in competitions announced by the Ministries of the Republic of Kazakhstan and international organizations for receiving grants for funded research projects;
* timely scheduled purchase of modern equipment and constant replenishment of the fleet of devices and tools;
* Conclusion of contracts with leading enterprises of the industry for internships/internships and further employment (with prologation).

**7 LIST OF ACTIONS OF THE OP IMPLEMENTATION PLAN**

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| # | Activities | Deadlines  Implementation timeline |
|  | Improvement of Bachelor's and master's degree programs, taking into account the opinion of potential employers | 2024-2028 |
|  | Drawing up a plan for publishing textbooks, manuals and methodological recommendations for educational programs | 2024-2028 |
|  | Active implementation of academic mobility of students and PPFrom | 2024-2028 |
|  | Expansion of scientific cooperation and partnerships with leading foreign universities and training centers, attracting leading foreign scientists to perform scientific research and give lectures for students | 2024-2028 |
|  | Equipping classrooms with modern equipment | 2024-2028 |
|  | Submitting applications for a competition on scientific projects of the Ministry of Agriculture, Ministry of Education and Science of the Republic of Kazakhstan, etc. | 2024-2028 |
|  | Publication of scientific articles in journals included in the WebofScience and Scopus databasesthe WebofScience and Scopus databases, in scientific journals with an impact factor | 2024-2028 |
|  | Passing an independent national specialized accreditation for OP 6B08201, 7M08201, 8D08201 - CCI | 2025-2028 |
|  | Participation in the Conference of the Russian Academy of Sciences in the Russian Academy of Sciences. in the national ranking of educational programs among higher education institutions of the Republic of Kazakhstan | , students annually |
|  | prepare and participate in the Republican subject Olympiads on OP 6B05102 - Biotechnology | 2024-2028 |
|  | Conclude contracts with specialized enterprises to complete industrial and research internships for students | 2024-2028 |
|  | Update the material and technical base of laboratories | 2024-2028 |
|  | Intensify cooperation with foreign educational organizations on the subject of harmonization of modules and start developing and implementing joint educational programs | 2024-2028 |
|  | ПContinuous monitorPermanent monitor ing graduate employment | 2024-2028 |

**8 MECHANISM FOR IMPLEMENTING THE DEVELOPMENT PLAN OF THE OP**

Carry out targeted work to increase the number of state educational grants, grants from local executive bodies, grants from employers under the educational program based on career guidance among school and college graduates.

Ensuring a high proportion of employed graduates by organizing and holding an annual "Graduate Fair", employers ' participation in the defense of the thesis, organizing professional practice with subsequent employment.

Strengthening the language training of teaching staff by compulsory attendance of foreign language courses created both at the university and outside it. A plan has been drawn up for improving language competence, as well as a step-by-step transition to multilingual education.

Implementation of innovative and investment projects with research centers and institutes, representatives of business structures, increasing the number of patents received.

Increase in the number of research projects implemented with funds received from the state budget, research funds, grants, contracts with external customers.

Teaching staff and students must participate in the international educational program of the President of the Republic of Kazakhstan "Bolashak", participate in a competition for grants for a trip to participate in a scientific conference (seminar, congress, congress), a scientific internship from the funds of the First President of the Republic of Kazakhstan, in the international program Erasmus+. in the DAAD scholarship program.

Optimization and expansion of the range of bachelor's, master's and doctoral degrees, increasing the number of magistrates in specialized, scientific and pedagogical areas in accordance with the requirements of the labor market.

Preparation ofstudents for participation in scientific conferences of intra-university and extra-university scale.

**9 ASSESSMENT OF THE SOCIO-ECONOMIC EFFICIENCY OF THE IMPLEMENTATION OF THE DEVELOPMENT PLAN OF THE OP**

The tasks set reflect the main directions of development of higher education in the Republic of Kazakhstan and allow us to maintain a decent level of image of our university.

The implementation of the Program will help to improve the quality of education and ensure access to quality education. Professional competencies will be formed within the framework of educational programs developed in accordancewith the requirements of employers.

As a result of theimplementationand development plan, the OP has a socio-economic effect:

- preventing the outflow of promising teaching staff to other industries;

-improving the quality of professional education and, as a result, the competitiveness of specialists;

- training of graduates who meet the needs of potential employers;

- updating of the educational and material base (educational and laboratory, computer and technological base that meetsmodern requirements and standards);

- the demand for graduates through the new infrastructure of real interaction withemployers – boards of trustees, andthe association of graduates;

- increasing the role of employers in the training of professional personnel;

- discussion of problems of employment of graduates, creation of bases of practices, branches of departments at enterprises, advanced training of teaching staff, lectures for students and teaching staff by leading specialists, organization of excursions to enterprises;

- timely identification and targeted supervision of the most active, talented, creatively thinking young people among 1-2-year students;

-internship and training of teaching staff in leading scientific centers of Kazakhstan, near and far abroad;

- реализовыватьсяthe main directions of state programs for the development of higher education will be implemented.

**10 SWOT analysis**

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| **S (strength) – strengths**  - qualitative composition of teaching staff, with a 51% retention rate;  - performance of research work by employees under the budget program;  - participation of students, undergraduates anddoctoralstudents in research work;  - conducting laboratory research on a free basis; | **W (weakness – - weaknesses**  -high academic workload of teaching staff;  - weak communication with foreign universities oninternships;  - insufficient level of knowledge of the English language of students and teachingstaff. |
| **O (opportunity) – favorable opportunities**  - a noticeable increase in the number of students at all levels;  - availability of contracts with research-institutes for-training and production practices of studentsand undergraduates; | **T (threat – - threats**  -competition in attracting teachers and students;  - aboutthe flow of young people and school leavers abroad. |

**GRADUATE MODEL**

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| --- | --- | --- | --- |
|  | 6B08201-" Technology of production of livestock | 7М08201  Technology of production of livestock products " | 8D08201  Technology of production of livestock products |
| **be able to:** | - memorizing the structural organization and functions of the work includes not only the development of theoretical plans, but also direct visits to livestock farms and enterprises to assess the situation and implement improvements.  -development and implement-tation of feeding programs adapted to specific animal species.  - preparation of diets, ensuring nutritious and balanced nutrition -quality control of livestock products, which includes checking sanitary and hygienic standards at enterprises  - compare the main types of livestock products and the principles of their production, methods of developing measures to improve economic and production indicators, ways to ensure the economic efficiency of production and obtain a product of the desired quality;  - to solve theoretical and practical optimizations of technological processes aimed at improving the efficiency and productivity of animal husbandry. | -study of modern methods of teaching disciplines in animal husbandry;  -the use of innovative teaching technologies in the process of scientific and pedagogical activity;  -the development of scientifically based methodological guidelines  - the laying of experiments, processing, analysis and systematization of information on the topics of research;  -identification and formulation of current scientific problems and research programs in animal husbandry;  -preparation of reports recommendations and scientific publications on topical issues of animal husbandry in the agro-industrial complex;  - organization and conduct of agrochemical analyses of feed of plant origin.  - organization and conduct of laboratory quality control of feed and features of feeding of agricultural animals;  -work with advanced methods and technologies in the field of agriculture, such as digitalization, the use of drones, sensors and automated control systems to optimize production processes;  - development of business plans, analysis of the agricultural products market, optimization of logistics and supply to increase the competitiveness of agricultural enterprises. | -identification and formulation of current scientific problems and research programs in animal husbandry;  - bookmark experiments, processing, analysis and systematization of informa-tion on the topics of ongoing research;  -preparation of reports, recommendations and scien-tific publications on topical issues of the agro-industrial complex.  - plan training sessions in accordance with the curriculum and based on its strategy;  - evaluate pedagogical results;  - identify specific pedagogical tasks, anticipate learning outcomes,  - select and use appropriate learning tools to build learning technology; |
| To know and understand: | -consultations on improving animal welfare, development of innovative approaches to breeding, as well as participation in marketing research to promote products on the market  - to assess the level of digital technology in various industries and in the agro-industrial complex as a whole;  - to evaluate material and human resources, as well as reasonable forecasting of the development of digital livestock technology in the agro-industrial complex using best practices;  -objectively assess the position of livestock production technology in the agro-industrial complex and identify relevant areas of development;  - skills in using modern computer control systems for technological processes in the production of livestock products;  - skills in managing the technology of livestock production technology, as well as the operation of equipment based on information technology;  -to analyze technical and economic indicators and marketing activities. -ensuring the development of biotechnological processes and the production of biotechnological products for plant use;  - be able to conduct market research in order to improve the effective operation of the enterprise (organization), attract investment, expand the service sector, etc.;  - plan, organize and control the activities of the enterprise, including having the skills to manage information flow, as well as temporary and other resources;  - assess the prospects for the development of the economy in market conditions, determine the optimal ratio of crop production and animal husbandry in order to continuously conduct production and increase the efficiency of the economy. | - objectively assess the level of digital technology in various industries and in the agro-industrial complex as a whole;  - to evaluate material and personnel support, as well as reasonable forecasting of the development of digital technology in the agro-industrial complex using best practices;  - objectively assess the situation of food production in the agro-industrial complex and identify relevant areas of development;  -analyze and evaluate promising areas of digital technology development for agricultural enterprises;  - skills in using modern computer process control systems in the production technology of livestock products;  - to analyze technical and economic indicators and marketing activities; | -apply theoretical and practical knowledge to solve problems that arise in the process of studying behavior and its relationship with their productivity of farm animals;  -recommend the most effective resource-saving technologies in the production of livestock products  -to argue and recommend to farms at a professional level modern and innovative technologies of production and primary processing of animal raw materials,  -to introduce new breeding methods and organize breeding work using elements of computer programs to increase the efficiency of production in sheep and goat breeding.  -use modern technologies for the production of poultry products,  -to argue for the most effective innovative methods of improving the incubation qualities of eggs;  -conduct breeding and breeding work with agricultural poultry at a professional level |
| Be competent in matters of: | - be able to form general cultural, general professional and professional competencies;  **-** be competent in all matters related to modern livestock processes:  - technologies for the production of livestock products, selection of microorganisms, plants and animals for solving various production and technological tasks  - have the skills to organize and develop an environmental, environmentally safe animal welfare system, conduct an examination of livestock products;  - have the skills to apply knowledge about the economic, political, national and cultural characteristics of countries and regions, foreign partners of agricultural activities in the Republic of Kazakhstan and international law, compliance with formalities and prescribed procedures when receiving and sending agricultural products;  - have skills in applying the state, Russian, English and another European or Asian language in professional activities, including fluency in special agricultural terms. | - in matters of labor legislation, norms and rules of labor protection and environmental safety, industrial sanitation and fire protection.  - in the analysis of information materials in the field of animal husbandry and use them in their professional activities.  - on the organization and management of technological production processes in animal husbandry;  - in the correct solution of livestock and other issues in extreme situations;  -planning and organization of breeding work in animal husbandry;  -regulation of the zoohygienic regime with insemination technology; - uniform distribution of resources, management of livestock enterprises  -organization of the maintenance of farm animals, poultry and fish -taking care of the nutrition and hygiene of individuals in the process of keeping and transportation  -calculation of the required amount of feed, assessment of their quality  -breeding, crossing of breeds, improvement of the breeding structure  - solving production tasks as part of the implementation of works to improve the production technology of animal husbandry productivity and their qualities. | - plan goals and objectives for the technology of processing livestock products in the conditions of farms of different forms of ownership;  - training sessions in accordance with the curriculum and based on its strategy;  - evaluate the results of determining the quality of products, fattening, reception and delivery of slaughtered animals;  - to determine the methodology of marketing research and information; the use of technology in the technology of production of livestock products and laboratory equipment for the study of the composition of feed, animal products (milk, meat, honey), etc.  - select and use appropriate learning tools to build learning technology;  - to develop doctoral students' skills in working with educational, special, scientific literature, manuals;  - to train doctoral students to conduct experiments independently and summarize the results obtained. |