# CATALOG OF ELECTIVE DISCIPLINES

6B08 - Agriculture and Bioresources
(Code and classification of the field of education)

6B082 - Livestock
(Code and classification of the direction of training)

0811
(Code in the International Standard Classification of Education)

B078 - Livestock
(Code and classification of the educational program group)

6B08201 - Technology of Production of Livestock Products
(Code and name of the educational program)

bachelor
(Level of preparation)

set of 2024

Semey 2024

## Developed
By the Academic Committee of the EP
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## Reviewed
at the meeting of the Commission on Academic Quality of the Faculty of Veterinary Medicine and Agricultural Management by protocol No. 3 of January 09, 2024.
at a meeting of the Academic Quality Commission
Research School of Veterinary Medicine and Agriculture.
Recommended for approval by the University Academic Council
Protocol No. 6 dated June 06, 2024

## Approved
at a meeting of the University Academic Council by protocol No. 3 of January 16, 2024.

at a meeting of the University Academic Council by protocol No. 6 of June 18, 2024.

## Physiologyofanimals

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 1 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*It is aimed at studying the integral functions of the body and the functions of all its parts. Examines bone functions, joint movements, physiology of the musculoskeletal system and muscles, blood and other body fluids, body defenses and the immune system, heart physiology and blood circulation, physiology of the digestive system, nutrition and metabolism, ovarian and extral cycles, pregnancy and childbirth.*

### Purpose of studying of the discipline
*To give students an idea of the integral functions of the body and the functions of all its parts.*

### Learning Outcomes
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline
*1. Compares the functions of the body and the functions of all its parts*
*2. Assesses bone function, joint movement, physiology of the musculoskeletal system*
*3. Recognizes the physiology of the digestive system*

### Prerequisites
*School course*

### Postrequisites
*Basic and profile disciplines of the EP*

## Private animal ethology

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 1 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline is aimed at studying animal behavior, analyzing genetically determined components of behavior and the problems of its evolution. Studies methods and tasks of animal ethology; behaviorism, species stereotype of behavior and labile behavioral reactions, learning patterns, criteria, observation and experiment, learning, general characteristics of instinct, features of ecological approach to ethology, the concept of a sign, Skinner`s experiments, differences between human and animal languages.*

### Purpose of studying of the discipline
*To give students an idea of animal behavior, genetic features of behavior and their development problems.*

### Learning Outcomes
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline
*1. Compares the behavior of animals*
*2. Evaluates the analysis of genetic characteristics of behavior and development problems*
*3. Recognizes the methodology and task of animal ethology*

### Prerequisites
*School course*

### Postrequisites
*Basic and profile disciplines of the EP*

## Animal Biochemistry

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 1 |
| Credits count | 8 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline is aimed at studying the molecular processes occurring in the cells of a living organism. The course examines the structure, structure and properties of the main biogenic molecules; metabolic processes occurring in the cells of various organs and tissues; finding out the causes of pathology of various diseases and finding ways to treat them effectively; biochemistry of animal productivity: meat, milk, bird eggs, skin and wool.*

### Purpose of studying of the discipline
*Students are directed to study the molecular processes occurring in the cells of a living organism.*

### Learning Outcomes
*ON 9 Apply modern research methods in the field of animal husbandry, scientific and technical information, domestic and foreign experience in animal husbandry and solve problems at a professional level in various branches of animal husbandry.*

### Learning outcomes by discipline
*1. Determine the structure and properties of the main biogenic molecules.*
*2. To predict the cause of pathology of various diseases and to find ways of their effective treatment*
*3. To investigate the metabolic processes occurring in the cells of various organs*

### Prerequisites
*ntroduction to the specialty*

### Postrequisites

*Genetic*

## Fundamentals of research in livestock

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 1 |
| Credits count | 8 |
| Knowledge control form | Examination |

### Short description of discipline
*Formation of students` modern skills in determining the methods and methods of conducting scientific research, the rules of evaluation and interpretation of the results obtained. The discipline considers the presentation of primary documentation in animal husbandry, the use of various methods of initial processing of material based on the results of scientific research in animal husbandry, methods and techniques for processing experimental data, economic evaluation of the results of experience, as well as basic research in animal husbandry.*

### Purpose of studying of the discipline
*To give future zooengineers knowledge, to develop their skills and skills of research work in animal husbandry.*

### Learning Outcomes
*ON 9 Apply modern research methods in the field of animal husbandry, scientific and technical information, domestic and foreign experience in animal husbandry and solve problems at a professional level in various branches of animal husbandry.*

### Learning outcomes by discipline
*1. Analyze the basics of scientific research in animal husbandry.*
*2. Evaluate the research work carried out in animal husbandry.*
*3. develop the basics of scientific research.*

### Prerequisites
*ntroduction to the specialty*

### Postrequisites
*Fish farming*

## Obstetrics and gynecology offarmanimals

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*It is aimed at the formation of knowledge and skills in obstetrics and gynecology of animals. The study of biological laws of reproduction of farm animals; physiological and pathological processes occurring in the body of female farm animals during insemination, fertilization, pregnancy, childbirth and the postpartum period; physiological patterns regulating the reproductive function of animals; veterinary gynecology and andrology of animals; rational methods of prevention and therapy of various diseases in animals.*

### Purpose of studying of the discipline
*To form knowledge and skills of students in obstetrics and gynecology of farm animals.*

### Learning Outcomes
*ON 4 To organize and carry out sanitary and preventive work to prevent the main diseases of animals, rational reproduction of animals.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline
*1. Perceives knowledge and skills in obstetrics and gynecology of animals*
*2. Assesses the reproduction processes of farm animals*
*3. Recognizes physiological and pathological processes of female farm animals*

### Prerequisites
*Basics of veterinary*

### Postrequisites
*Breeding business in animal husbandry*

## Veterinary and sanitary examination of animal products

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline is aimed at studying the main technologies implemented in the framework of digitalization of the agricultural sector of Kazakhstan. It includes the creation of experienced digital enterprises in animal husbandry (smart dairy farm, automatic pig farm, etc.) based on intelligent automated and robotic biomachine complexes of a new generation; digital tools for using informative resources; acquisition of practical skills in using digital technologies to solve applied problems in agriculture.*

### Purpose of studying of the discipline
*To give students an idea of slaughtered animals, their preparation for slaughter and work after their slaughter.*

### Learning Outcomes
*ON 4 To organize and carry out sanitary and preventive work to prevent the main diseases of animals, rational reproduction of animals.*
*ON 10 To develop and carry out measures for the management of technological processes for primary processing, standardization and certification of livestock products, commodity science and expertise of livestock raw materials, to assess the costs of ensuring product quality, adaptation of modern versions of quality management systems to specific production conditions.*

### Learning outcomes by discipline

*1. Plans transportation of perishable products*
*2. Evaluates veterinary and sanitary control on refrigerating transport*
*3. Recognizes the technology and hygiene of slaughter animals*

### Prerequisites

*Basics of veterinary*

### Postrequisites

*Breeding business in animal husbandry*

## Histology

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*The discipline is aimed at studying the structure, vital activity and development of tissues of living organisms. Considers the formation and development of histology as a science, methods of microscopy of histological preparations; methods of studying living tissues; tissue as a system; development and classification of tissues; tissue regeneration; general morphological characteristics and classification and structure of epithelial, connective, muscular, nervous tissue of animals; private histology.*

### Purpose of studying of the discipline

*The purpose of this course is to study the macro and microscopic structure and phylo ontogenetic development of organ systems of farm animals.*

### Learning Outcomes

*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline

*1. Examines the vital activity and tissue development of living organisms*
*2. Evaluation of histological preparations*
*3. Recognizes living tissue research methods*

### Prerequisites

*Anatomyofanimals*

### Postrequisites

*Zoohyena*

## Cytology

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*The course is aimed at studying cytology as a science, the current level of knowledge about the cell. Examines the history and methods of microscopic studies, the structure of somatic and germ cells at the submicroscopic level, cellular theory, types of cellular organization, cell surface apparatus, cell musculoskeletal system, endoplasmic network, Golgi apparatus, lysosomes, ribosomes, centrosomes, mitochondria, cell nucleus, cell cycle, cell division.*

### Purpose of studying of the discipline

*To give the student a complete picture of animal cells.*

### Learning Outcomes

*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline

*1. Demonstrates cytology as a science*
*2. Assesses the structure of somatic and germ cells at the submicroscopic level*
*3. Recognizes the musculoskeletal system of animal cells*

### Prerequisites

*Anatomyofanimals*

### Postrequisites

*Zoohyena*

## Digitalization in animal husbandry

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*The discipline is aimed at studying the main technologies implemented in the framework of digitalization of the agricultural sector of Kazakhstan. It includes the creation of experienced digital enterprises in animal husbandry (smart dairy farm, automatic pig farm, etc.) based on intelligent automated and robotic biomachine complexes of a new generation; digital tools for using informative resources; acquisition of practical skills in using digital technologies to solve applied problems in agriculture.*

### Purpose of studying of the discipline

*Education of students about the main technologies in the framework of digitalization of the agricultural sector.*

### Learning Outcomes

*ON 3 To recommend modern information technologies in the production and processing of livestock products, scientific achievements in*

*assessing the quality of feed and products, in standardization and certification of livestock products, to argue the need for mechanization and automation of technological processes.*

### Learning outcomes by discipline

*1. Evaluates the technology being implemented in the framework of digitalization of the agricultural sector of Kazakhstan*
*2. Demonstrates digital tools for using informative resources*
*3. Plans for experienced digital enterprises in animal husbandry*

### Prerequisites

*Forage production*

### Postrequisites

*Technology of livestock products production*

## Electrification of agriculture

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*It is aimed at studying the use of electric energy in technological processes in the production of livestock products. Studies the process of electrification of livestock farms and other premises, the centralization of energy conservation, the use of electric energy in energy-intensive agricultural production processes, energy-saving technologies in animal husbandry, electronic identification systems in animal husbandry, electrical technologies in creating a microclimate in rooms for keeping animals and poultry.*

### Purpose of studying of the discipline

*Formation of the student`s competencies in the field of electric power engineering in the production of livestock products.*

### Learning Outcomes

*ON 3 To recommend modern information technologies in the production and processing of livestock products, scientific achievements in assessing the quality of feed and products, in standardization and certification of livestock products, to argue the need for mechanization and automation of technological processes.*

### Learning outcomes by discipline

*1. Evaluates the use of electric energy in technological processes in the production of livestock products*
*2. Demonstrates the process of electrification of livestock farms and other premises*
*3. Plans to use electric energy in energy-intensive processes of agricultural productionproducts*

### Prerequisites

*Forage production*

### Postrequisites

*Technology of livestock products production*

## Management in animal husbandry

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*Formation of students` knowledge and practical skills in the management of processes in animal husbandry. The scientific and methodological foundations of management, management methods, planning, organization of labor, processes, actions, motivation and stimulation, accounting and control, animal feeding management, livestock reproduction management, cattle breeding management, pig breeding management, sheep breeding management, poultry management, horse breeding management, organization and management of small-scale farming are considered.*

### Purpose of studying of the discipline

*Training of students in management, management methods, organization of work and processes, planning of actions, motivation and motivation.*

### Learning Outcomes

*ON 7 Develop and carry out measures to increase various production indicators of animal husbandry, analyze and plan technological processes as objects of management, the work of a team of performers, making financial and managerial decisions in conditions of different opinions.*

### Learning outcomes by discipline

*1. Demonstrates practical skills in managing processes in animal husbandry*
*2. Evaluates the scientific and methodological basis of management*
*3. Plans the organization and management of small-scale farming*

### Prerequisites

*Beekeeping*

### Postrequisites

*Poultry breeding*

## Fundamentals of marketing in animal husbandry

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*Formation of students` basic theoretical knowledge and practical skills in the field of marketing basics in animal husbandry. Theoretical and practical aspects of marketing, the role of the consumer in the system of marketing services, conducting market research in livestock industries, concepts of goods and price, policy formation in matters of goods and prices, competitiveness and competitiveness, marketing management in the field of animal husbandry are considered.*

### Purpose of studying of the discipline

*Formation of students ` understanding of the theoretical and practical aspects of marketing in animal husbandry*

### Learning Outcomes

*ON 7 Develop and carry out measures to increase various production indicators of animal husbandry, analyze and plan technological processes as objects of management, the work of a team of performers, making financial and managerial decisions in conditions of different opinions.*

### Learning outcomes by discipline

*1. Demonstrates theoretical knowledge and practical skills in the field of marketing in animal husbandry*
*2. Evaluates the theoretical and practical aspects of marketing*
*3. Plans to conduct market research in livestock industries*

### Prerequisites

*Beekeeping*

### Postrequisites

*Poultry breeding*

## Camel breeding

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*Mastering knowledge on the technology of camel production. Species, breed and interspecific features of camel hybrids, reproductive qualities of camels, norms and diets of feeding and keeping camels, features of breeding in camel breeding, camel as a working animal, camel meat production technology, ways to reduce the cost of meat production, dairy productivity of dromedaries, bactrians and hybrids, production technology of fur coat in farms are considered.*

### Purpose of studying of the discipline

*To give in-depth study to students about the state of camel breeding in our country and abroad.*

### Learning Outcomes

*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline

*1. Evaluates the technology of production of camel products*
*2. Demonstrates pedigree and interspecific features of camel hybrids*
*3. Compares ways to reduce the cost of meat production*

### Prerequisites

*Cultivation and selection of farm animals*

### Postrequisites

*Commodity science and expertise of livestock raw materials*

## Embryoengineering

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*Mastering the theory and practice of micromanipulation with embryos and gametes, applying the achievements of molecular and cellular technologies in order to preserve the existing small and endangered animal breeds. Developmental biology, the process of in vitro fertilization and other assisted reproductive technologies in animal husbandry, the processes of cloning DNA fragments, genome sequencing, genome mapping, the use of assisted reproductive technologies, bioengineering methods for preserving the gene pool of animals are considered.*

### Purpose of studying of the discipline

*Master the course on the theory and practice of embryos and gametes for students.*

### Learning Outcomes

*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*

### Learning outcomes by discipline

*1. Evaluates the cloning process of DNA fragments*
*2. Plans to use assisted reproductive technologies*
*3. Demonstrates bioengineering methods of preserving the gene pool of animals.*

### Prerequisites

*Cultivation and selection of farm animals*

### Postrequisites

*Commodity science and expertise of livestock raw materials*

## Biometrics

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline forms ideas about mathematical methods of processing experimental material to prove the objectivity and reliability of the results obtained, the relationship of signs and phenomena. The fundamental methods of biometrics for the use of explanations of statistical processes in animal husbandry, the most important provisions of variational statistics, as well as the requirements for the formation of data and the main provisions of correlation, variance and regression, as well as work with computer technologies, software are considered.*

### Purpose of studying of the discipline
*Expansion and deepening of students` knowledge on statistical data processing in animal husbandry.*

### Learning Outcomes
*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*

### Learning outcomes by discipline
*1. Compares biometrics methods for using explanations of statistical processes in animal husbandry,*
*2. assesses the requirements in the formation of data and the main provisions of the correlation*
*3. Demonstrates the processing of experimental material to prove the objectivity and reliability of the results obtained*

### Prerequisites
*Cultivation and selection of farm animals*

### Postrequisites
*Cattle breeding*

## Plant biotechnology

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 3 |
| Credits count | 7 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline is aimed at revealing modern ideas about plant biotechnology. Studies the most important stages in the history of the development of biological methods of plant cell cultivation, the study of the basic principles and methods of cellular and genetic engineering of higher plants, as well as cryopreservation and its application to plant cell cultures, including the features of secondary differentiation in plant cultures, the cultivation of plant cells in vitro, the production of callus and suspension cultures.*

### Purpose of studying of the discipline
*Providing students with a complete understanding of plant biotechnology*

### Learning Outcomes
*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*

### Learning outcomes by discipline
*1. Discusses improving the efficiency of animal husbandry by biotechnology methods.*
*2. Evaluates the basic concepts of animal biotechnology.*
*3. Demonstrates animal biotechnology research methods for breeding*

### Prerequisites
*Cultivation and selection of farm animals*

### Postrequisites
*Cattle breeding*

## Microbiology

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline is aimed at forming a theoretical and practical basis for conducting microbiological research and analyzing the microflora of living organisms living in different environments. Systematics of microorganisms, prokaryotes and eukaryotes, bacteria and archaea, nomenclature and morphological features of microorganisms, physiology of microbes, systematics of prokaryotes, isolation of pure cultures of aerobic and anaerobic bacteria, genetics of microorganisms, the doctrine of infection, the evolutionary process of microorganisms are considered.*

### Purpose of studying of the discipline
*Formation of students ` theoretical and practical knowledge of microbiological and living organisms living in different environments*

### Learning Outcomes
*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*

### Learning outcomes by discipline
*1. Perceives the theoretical and practical foundations for conducting microbiological research*
*2. Evaluates the systematics of microorganisms*
*3. Demonstrates the doctrine of infection and the evolutionary process of microorganisms.*

### Prerequisites
*Cultivation and selection of farm animals*
### Postrequisites
*Cattle breeding*

## Food biotechnology

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 3 |
| Credits count | 7 |
| Knowledge control form | Examination |

### Short description of discipline
*The course examines the prospects for the development and current issues of food biotechnology as an important priority area of science. Examines the systematization of biotechnological bases for processing plant and animal raw materials in the field of enzymatic bioconversion technologies, methods and methods for creating genetically modified food sources and regulating their use in legislation, the use of significant biotechnological processes in food production.*
### Purpose of studying of the discipline
*Full education of students about food biotechnology.*
### Learning Outcomes
*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*
### Learning outcomes by discipline
*1. Discusses topical issues of food biotechnology as an important priority area of science*
*2. Evaluation of biotechnological bases of processing of plant and animal raw materials*
*3. Demonstrates ways and methods to create genetically modified food sources*
### Prerequisites
*Cultivation and selection of farm animals*
### Postrequisites
*Cattle breeding*

## Agricultural economy

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*It is aimed at studying the specifics of activities in agricultural production, forms and consequences of state regulation in the agricultural sector. Studies the world agrarian system, the practice of agrarian reforms in the conditions of transitional periods of economic transformations, the effectiveness of the bending supply curve, methods of state intervention in the market, integration in cooperation of producers or trade protectionism, methods of assessing the level of state support for the agricultural sector of the economy.*
### Purpose of studying of the discipline
*Formation of students ` understanding of the forms and consequences of state regulation in the agricultural sector.*
### Learning Outcomes
*ON 7 Develop and carry out measures to increase various production indicators of animal husbandry, analyze and plan technological processes as objects of management, the work of a team of performers, making financial and managerial decisions in conditions of different opinions.*
### Learning outcomes by discipline
*1. Studies the peculiarities of the functioning of agricultural production*
*2. Applies the global agrarian system in the transition periods of the economy*
*3. Integrates methods of government intervention in markets*
### Prerequisites
*Breeding business in animal husbandry*
### Postrequisites
*Undergraduate practice*

## Accounting in agriculture

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*Mastering knowledge and practical skills of accounting in agriculture, having certain features related to the production of products, as well as the nature of services and labor provided, forms of sales, technological features. The methods of accounting for animals during cultivation and fattening are considered, as well as cost accounting and calculation of the cost of livestock products, including accounting for agricultural products and their sale, mandatory insurance of the company`s property.*
### Purpose of studying of the discipline
*Formation of students ` understanding of accounting in agriculture.*
### Learning Outcomes
*ON 7 Develop and carry out measures to increase various production indicators of animal husbandry, analyze and plan technological processes as objects of management, the work of a team of performers, making financial and managerial decisions in conditions of*

*different opinions.*

### Learning outcomes by discipline

*1. availability of accounting skills and practical skills in agriculture*
*2. be competent in calculations for breeding and fattening livestock and poultry*
*3. be able to produce and calculate the cost of livestock products*

### Prerequisites

*Breeding business in animal husbandry*

### Postrequisites

*Undergraduate practice*

## Fur farming

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination and term work/Project |

### Short description of discipline

*The discipline forms and develops students` competence in the technology of production of animal husbandry products. The characteristics of fur-bearing animals with cellular content, seasonal reproduction and features in the structure of reproductive organs, types of content in fur farming, features of breeding work, determination of the value, quality and sorting of skins of each type of fur, rules for breeding mink, sable, fox, arctic fox, raccoon dog, nutria, marmot, chinchilla are studied.*

### Purpose of studying of the discipline

*The purpose of mastering the discipline is to deepen knowledge about the biological and economic characteristics of fur- bearing animals and technological processes of fur production, as well as to improve the skills and abilities that allow production in conditions of small and large fur farms at a highly profitable level with its constant improvement.*

### Learning Outcomes

*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline

*1. Demonstrates competence in the production technology of animal husbandry products*
*2. Assesses seasonal reproduction and features in the structure of reproductive organs*
*3. Compares the characteristics of fur-bearing animals with cellular content,*

### Prerequisites

*Breeding business in animal husbandry*

### Postrequisites

*Undergraduate practice*

## Karakul breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 6 |
| Knowledge control form | Examination |

### Short description of discipline

*Formation of knowledge about the state, significance and prospects of the development of karakul breeding at the present stage of the market economy. Breed types of Karakul sheep, distribution zones of sheep, reproduction and cultivation of Karakul sheep, maintenance and feeding, production technology of karakul, basic rules and techniques of slaughter of lambs for karakul, primary processing, storage and marketing of karakul skins, sorting of karakul skins are considered.*

### Purpose of studying of the discipline

*To give students an idea of the state, importance and development prospects of the karakul economy*

### Learning Outcomes

*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*

### Learning outcomes by discipline

*1. Demonstrates the importance and prospects for the development of karakul farming in a market economy*
*2. Evaluates the breed types of Karakul sheep*
*3. Compares the basic rules and techniques of slaughtering lambs on the doodle*

### Prerequisites

*Breeding business in animal husbandry*

### Postrequisites

*Undergraduate practice*

## Goat breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 6 |

| | |
|---|---|
| Knowledge control form | Examination |

### Short description of discipline
*Formation of knowledge and skills on the technology of production of goat products. The biology and economic features of goats are considered; dairy, down, wool, meat, combined breeds; breeding and breeding work in goat breeding; goat breeding technique; herd structure; reproduction of goats; lactation of goats; normalized feeding of goats; the main types of goat products – wool, down, milk, meat and by-products; production efficiency goat breeding products.*

### Purpose of studying of the discipline
*To give students an idea of the technology of production of goat products.*

### Learning Outcomes
*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline
*1. Demonstrates knowledge and skills in goat breeding production technology*
*2. Assesses the biological and economic characteristics of goats*
*3. Compares breeding and breeding work in goat breeding*

### Prerequisites
*Breeding business in animal husbandry*

### Postrequisites
*Undergraduate practice*

## Computer modelingin animal husbandry

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 8 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline is aimed at mastering the knowledge and skills of computer modeling in animal husbandry. The specific features of models and their classification, structural processes in modeling, the special role of the model in the process of studying complex systems, basic methods in the construction and analysis of system models, planning of simulation programs MatLab and MathCAD, analysis and interpretation of the simulation results in programs are considered.*

### Purpose of studying of the discipline
*Formation of students ` knowledge and skills in computer modeling in animal husbandry*

### Learning Outcomes
*ON 3 To recommend modern information technologies in the production and processing of livestock products, scientific achievements in assessing the quality of feed and products, in standardization and certification of livestock products, to argue the need for mechanization and automation of technological processes.*

### Learning outcomes by discipline
*1. Demonstrates knowledge and skills of computer modeling in animal husbandry*
*2. Evaluates the specific features of models and their classification*
*3. Compares structural processes in modeling*

### Prerequisites
*Poultry breeding*

### Postrequisites
*Undergraduate practice*

## Rabbit breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination and term work/Project |

### Short description of discipline
*Formation of students` theoretical and practical foundations for the production technology of rabbit breeding products. The state and prospects of rabbit breeding development are considered; economic and biological features of rabbits; features of keeping and feeding rabbits of the main herd, breeding and non-breeding young; classification of rabbit breeds in the direction of productivity; meat, skin, down productivity of rabbits; measures to ensure the receipt of high-quality skins.*

### Purpose of studying of the discipline
*Mastering the skills of rational maintenance regimes, organizations and slaughter, primary processing of rabbit skins and determination of their quality, rabbit breeding production technology based on modern*
*zootechnical science and practice.*

### Learning Outcomes
*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline
*1. Demonstrates knowledge of theoretical and practical rabbit breeding production technology*

*2. Assesses the state and prospects of rabbit breeding development*
*3. Compares the economic and biological characteristics of rabbits*

### Prerequisites

*Breeding business in animal husbandry*

### Postrequisites

*Undergraduate practice*

## Standardization and certification of livestock products

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*The discipline studies the basics of standardization, metrology, assessment of product quality compliance with requirements and regulatory documents, product safety, consumer properties of agricultural products, quality regulation. It includes a general description of standards of different categories and types, a general description of technical regulation, the concept of technical regulations, sanitary and hygienic requirements for product safety, organizational and methodological foundations of standardization, quality and consumer properties of products, standardization of livestock products.*

### Purpose of studying of the discipline

*To explain to students about Standardization, Metrology, assessment of product quality for compliance with requirements and regulatory documents.*

### Learning Outcomes

*ON 10 To develop and carry out measures for the management of technological processes for primary processing, standardization and certification of livestock products, commodity science and expertise of livestock raw materials, to assess the costs of ensuring product quality, adaptation of modern versions of quality management systems to specific production conditions.*

### Learning outcomes by discipline

*1. Demonstrates the general characteristics of standards of different categories and types*
*2. Assesses product quality compliance with requirements and regulatory documents*
*3. Compares the quality and consumer properties of products*

### Prerequisites

*Maral breeding*

### Postrequisites

*Undergraduate practice*

## Technology of primary processing of animal products

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*Formation of students` knowledge and skills in managing technological processes for the primary processing of animal products. The rules of transportation of slaughtered animals to the meat processing plant, the schedule of receiving and handing over animals for slaughter, primary processing of slaughtered animals, technologies for processing slaughter products, fat, blood, intestinal and endocrine raw materials, technologies for processing leather and fur raw materials, technologies for preserving and storing meat and meat products are considered.*

### Purpose of studying of the discipline

*Formation of theoretical and practical skills of students in the management of technological processes from the reception and delivery of animals and poultry to processing enterprises and the primary processing of livestock products to the sale of finished products.*

### Learning Outcomes

*ON 10 To develop and carry out measures for the management of technological processes for primary processing, standardization and certification of livestock products, commodity science and expertise of livestock raw materials, to assess the costs of ensuring product quality, adaptation of modern versions of quality management systems to specific production conditions.*

### Learning outcomes by discipline

*1. Demonstrates knowledge and skills in managing technological processes for the primary processing of animal products*
*2. Evaluates the rules for transporting slaughtered animals to the meat processing plant*
*3. Compares the technology of processing products*

### Prerequisites

*Maral breeding*

### Postrequisites

*Undergraduate practice*

## Expert systems in forecasting livestock products

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 8 |
| Knowledge control form | Examination |

### Short description of discipline

*Formation of theoretical knowledge and practical skills when using expert systems in forecasting livestock products. The functioning of a static and dynamic expert system, the use of an artificial intelligence expert system, methods and methods of constructing an expert*

*system, a subject-oriented expert system and possible ways of their implementation, the design of a professionally oriented information system using artificial intelligence technologies and knowledge engineering are considered.*

### Purpose of studying of the discipline

*Students fully master the theoretical and practical aspects of the use of expert systems in forecasting livestock products*

### Learning Outcomes

*ON 3 To recommend modern information technologies in the production and processing of livestock products, scientific achievements in assessing the quality of feed and products, in standardization and certification of livestock products, to argue the need for mechanization and automation of technological processes.*

### Learning outcomes by discipline

*1. Demonstrates knowledge and practical skills when using expert systems in forecasting livestock products*
*2. Evaluation of methods and methods of building expert systems*
*3. Compares subject-oriented expert systems and possible ways of their implementation*

### Prerequisites

*Poultry breeding*

### Postrequisites

*Undergraduate practice*

## Anatomyofanimals

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 1 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*It is aimed at studying the laws of the structure and development of the system and organs of the animal`s body, as well as species and age features in the structure. Studies the terms directions, planes of the body, area and parts of the animal`s body, body structure, skeleton and bones, joints, muscles, endocrinology, body coverings, anatomy of the mammary gland, nervous system, sensory organs, anatomy of the cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive systems.*

### Purpose of studying of the discipline

*To give students an idea of the structure and development of systems and organs of the animal body.*

### Learning Outcomes

*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline

*1. Compares the structure and development of systems and organs of the animal body*
*2. Assesses the age-related features of the structure of the animal body*
*3. Recognizes areas and parts of the animal`s body*

### Prerequisites

*School course*

### Postrequisites

*The methodology of experimental business and the basics of patenting*

## The methodology of experimental business and the basics of patenting

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 1 |
| Credits count | 8 |
| Knowledge control form | Examination |

### Short description of discipline

*The course is aimed at studying the main areas of research that determine scientific and technological progress in animal husbandry, as well as methods and main stages of research work. The course examines the organization of zootechnical experience, conditions that ensure the reliability of the results of experience, systematization, analysis and evaluation of the results of experience, the structure of the main types of patent documentation, the purpose and types of patent search, traditional search for patent information.*

### Purpose of studying of the discipline

*To give future specialists the knowledge, the methodology of experimental work and the basics of patenting in animal husbandry.*

### Learning Outcomes

*ON 9 Apply modern research methods in the field of animal husbandry, scientific and technical information, domestic and foreign experience in animal husbandry and solve problems at a professional level in various branches of animal husbandry.*

### Learning outcomes by discipline

*1. Analyze the methodology of experimental business and the basics of patenting*
*2. Evaluate the methodology of experimental work in animal husbandry.*
*3. To develop the basics of patenting research works.*

### Prerequisites

*ntroduction to the specialty*

### Postrequisites

*Fish farming*

## Fish farming

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*It is aimed at studying the current state and prospects for the development of fish farming. The course examines the development of fish farming, the organization of fish cultivation and rearing, fish feeding, assessment of the fatness of fish, fish breeding, organization of fishing, storage and transportation of fish products, basic fishing gear, nets, seines, trawls, fishing vessels, fishing mechanization and refrigeration units, primary processing of fish, organization of promotion of fish products on the market.*
### Purpose of studying of the discipline
*The purpose of studying the discipline is the formation of knowledge and skills among students in fish biology, morphological, physiological and functional features of fish farming.*
### Learning Outcomes
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*
### Learning outcomes by discipline
*1. To characterize the state and prospects of fish farming development*
*2. Plan the development of fish farming, organization and rearing of fish*
*3. Discuss the organization of fish products promotion on the market*
### Prerequisites
*The methodology of experimental business and the basics of patenting*
### Postrequisites
*Beekeeping*

## Beekeeping

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*The discipline forms knowledge and practical skills on the technology of bee production. The discipline considers the biological features of the bee family, species and breed characteristics of bees and zoning, methods of keeping and caring for bees, reproduction of bees and breeding work in apiaries, new technologies for the production of bee products, features of zonal and regional specialization, planning the size of beekeeping, farms and apiaries.*
### Purpose of studying of the discipline
*To get acquainted and examine the valuable products taken - bee honey, wax, pollen, royal jelly and bee venom from beekeeping for the national economy.*
### Learning Outcomes
*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*
### Learning outcomes by discipline
*1. Formulates skills on bee production technology*
*2. Assesses the biological characteristics of the bee family*
*3. Recognizes the species and breed characteristics of bees and their zoning*
### Prerequisites
*Anatomyofanimals*
### Postrequisites
*Cultivation and selection of farm animals*

## Mechanization and automation of animal husbandry

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 2 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*The course is aimed at mastering technologies in the mechanization of production processes in animal husbandry. Studies the mechanisms of agricultural machinery and equipment of livestock premises and farms, compliance with the rules of their operation, preparation of working systems of machines and equipment for milking animals, preparation and distribution of feed, microclimate, water supply, manure removal, veterinary and sanitary work, automation of drying and ventilation processes, feed production, poultry feeding.*
### Purpose of studying of the discipline
*The purpose of the discipline is to provide students with theoretical and practical knowledge on the technology and mechanization of production processes in animal husbandry, the purpose of machinery and equipment of livestock farms and farms, the rules of their operation and rational use to maximize production at the lowest cost and taking into account environmental requirements*
### Learning Outcomes
*ON 3 To recommend modern information technologies in the production and processing of livestock products, scientific achievements in assessing the quality of feed and products, in standardization and certification of livestock products, to argue the need for mechanization and automation of technological processes.*
### Learning outcomes by discipline
*1. Shows the mechanization of production processes in animal husbandry*

*2. Assesses the preparation of working systems of machines and equipment for milking animals*
*3. Compares the microclimate, water supply, manure removal, veterinary and sanitary work in poultry farms*

### Prerequisites

*Forage production*

### Postrequisites

*Technology of livestock products production*

## Technology and organization of production of national products

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*The discipline is aimed at the formation of students` skills in mastering the methods of technological processes and the organization of the production of national food products. The course examines a set of technological measures used in the cultivation of horses of different age and gender groups; the main technological aspects, rules and techniques for organizing the production of national meat and dairy products; modern technologies for the production of koumiss with various methods of organizing technological processes.*

### Purpose of studying of the discipline

*Full mastering of technological processes and production of national food products by students.*

### Learning Outcomes

*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*

### Learning outcomes by discipline

*1. Assesses the skills of mastering the methods of technological processes of national food products*
*2. Demonstrates the main technological aspects*
*3. Plans rules and techniques for organizing the production of national meat and dairy products*

### Prerequisites

*Beekeeping*

### Postrequisites

*Poultry breeding*

## Animal biotechnology

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 3 |
| Credits count | 7 |
| Knowledge control form | Examination |

### Short description of discipline

*The discipline is aimed at studying the subject and basic concepts of animal biotechnology. The course examines the directions and methods of animal biotechnology research, its importance for breeding, breeding, animal reproduction biotechnology, as well as molecular genetic and cellular foundations of ontogenesis, mastering cultural, embryoengineering, embryotransplantation methods used in animal husbandry, improving the efficiency of animal husbandry by biotechnology methods, the market of commercial biotechnological products.*

### Purpose of studying of the discipline

*Formation of students ` ideas about the directions and methods of Animal Biotechnology.*

### Learning Outcomes

*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*

### Learning outcomes by discipline

*1. Discusses improving the efficiency of animal husbandry by biotechnology methods.*
*2. Evaluates the basic concepts of animal biotechnology.*
*3. Demonstrates animal biotechnology research methods for breeding*

### Prerequisites

*Cultivation and selection of farm animals*

### Postrequisites

*Cattle breeding*

## Breeding business in animal husbandry

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline

*Formation of theoretical skills of breeding work for practical activities. The course examines the system of breeding work in animal husbandry, the theoretical justification of breeding, evaluation of breeding qualities of producers of farm animals during selection, forecasting the effect of breeding, breeding work in animal breeding, breeding value of producers, breeding work in farms of various types, breeding accounting, organization and justification of planning breeding work.*

### Purpose of studying of the discipline

*The purpose of the discipline is to provide students with the necessary amount of theoretical knowledge, methodological and theoretical skills necessary for the organization of effective breeding work with families, lines, herds and breeds.*

### Learning Outcomes
*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*
### Learning outcomes by discipline
*1. Evaluates breeding work for practical activities*
*2. Plans a system of breeding work in animal husbandry*
*3. Demonstrates the breeding qualities of producers of farm animals during selection*
### Prerequisites
*Cultivation and selection of farm animals*
### Postrequisites
*Cattle breeding*

## Maral breeding

| | |
|---|---|
| Discipline cycle | Basic disciplines |
| Course | 3 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*This discipline consists in breeding marals as a branch of animal husbandry. Studies the history of the origin and biological qualities of marals; the concept of the exterior, constitution and interior of marals; productivity of marals; methods of assessing productivity; meat and antler productivity; accounting of products; methods of rearing young animals; the system of keeping marals; features of zootechnical and breeding accounting in maral breeding; selection of methods of selection and selection of marals.*
### Purpose of studying of the discipline
*Formation of theoretical knowledge and practical skills in the maintenance, breeding, feeding of marals, production technology of maral breeding.*
### Learning Outcomes
*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*
### Learning outcomes by discipline
*1. Assesses the origin and biological characteristics of marals*
*2. Plans zootechnical and breeding accounting in maral breeding*
*3. Demonstrates the principles and methods of selection and selection of deer.*
### Prerequisites
*Cultivation and selection of farm animals*
### Postrequisites
*Commodity science and expertise of livestock raw materials*

## Pig breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination and term work/Project |

### Short description of discipline
*It is aimed at studying the state, significance and prospects of pig breeding development at the current stage of the market economy. The biology and economically useful features of pigs, quantitative and qualitative indicators, the doctrine of the breed are studied; standards for feeding and keeping pigs, reproductive qualities of pigs, breeding work in pig breeding, in- line pork production, pig production technology, types of specialized farms: reproductive, fattening and with a complete production cycle.*
### Purpose of studying of the discipline
*Formation of theoretical knowledge and practical skills in pig meat production technology .To teach students to master the methods of increasing fattening and meat productivity, the efficiency of feed use, the intensification of pork production.*
### Learning Outcomes
*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*
### Learning outcomes by discipline
*1. Demonstrates the importance and prospects of pig breeding development at the current stage of the market economy*
*2. Evaluates the biology and economically useful features of pigs*
*3. Compares quantitative and qualitative indicators of pigs*
### Prerequisites
*Breeding business in animal husbandry*
### Postrequisites
*Undergraduate practice*

## Horse breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |

| | |
|---|---|
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*Formation of knowledge and skills about working, productive and sports horse breeding. Horse breeds, peculiarities of keeping and feeding horses, reproduction of horses, basic principles and techniques of breeding work in horse breeding, technology of horse meat, mare`s milk, koumiss, export of horses, training and testing of horses, information about national equestrian games, types of working use of horses in agricultural production are considered.*

### Purpose of studying of the discipline
*To train specialists capable on the basis of knowledge of the biotechnical and economically useful features of horses, to properly organize the breeding, cultivation and use of horses in the national economy in enterprises of various forms of ownership*

### Learning Outcomes
*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*

### Learning outcomes by discipline
*1. Demonstrates horse breeds and their maintenance features*
*2. assesses knowledge and skills about productive and sports horse breeding.*
*3. Compares the technology of horse meat and mare`s milk production*

### Prerequisites
*Breeding business in animal husbandry*

### Postrequisites
*Undergraduate practice*

## Information technologies in animal breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 8 |
| Knowledge control form | Examination |

### Short description of discipline
*Acquisition by students of knowledge about information technologies and the development of basic software products used in modern practice and fully ensuring the solution of breeding tasks in animal husbandry. Computer technologies, software, the concept and characteristics of an automated workplace, management of the production process and breeding work using the IAS program, skills of understanding the capabilities of computer technologies and software are considered.*

### Purpose of studying of the discipline
*The study by students of the system of collecting, accumulating, storing, processing and transmitting information to different levels of breeding management in the conditions of a large- scale approach to solving the problem with intensive technologies of livestock production*

### Learning Outcomes
*ON 3 To recommend modern information technologies in the production and processing of livestock products, scientific achievements in assessing the quality of feed and products, in standardization and certification of livestock products, to argue the need for mechanization and automation of technological processes.*

### Learning outcomes by discipline
*1. Demonstrates knowledge about information technologies and basic software products in animal husbandry*
*2. Evaluates breeding and breeding work using the "IAS" program*
*3. Compares computer technologies and software*

### Prerequisites
*Poultry breeding*

### Postrequisites
*Undergraduate practice*

## Commodity science and expertise of livestock raw materials

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 5 |
| Knowledge control form | Examination |

### Short description of discipline
*Mastering theoretical and practical skills in the field of commodity science and expertise of livestock raw materials by students. Animal raw materials are considered as a product of industrial use, types of classification and coding of animal raw materials, assortment of animal raw materials and analysis of its structure, methods of assessing the quality indicators of animal raw materials, problems of information support of commodity science and examination of goods, commodity science and examination in customs.*

### Purpose of studying of the discipline
*Formation of students` theoretical and practical skills in commodity science and expertise of animal raw materials*

### Learning Outcomes
*ON 10 To develop and carry out measures for the management of technological processes for primary processing, standardization and certification of livestock products, commodity science and expertise of livestock raw materials, to assess the costs of ensuring product quality, adaptation of modern versions of quality management systems to specific production conditions.*

### Learning outcomes by discipline
*1. availability of theoretical and practical skills in the field of commodity science*
*2. examination of animal husbandry raw materials*

*3. analysis of the type of raw materials of animal origin and its structure*

### Prerequisites

*Breeding business in animal husbandry*

### Postrequisites

*Undergraduate practice*

## Sheep breeding

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 6 |
| Knowledge control form | Examination |

### Short description of discipline

*The discipline is aimed at studying industrial technologies for the production of sheep products. The biological features of sheep, zoological and industrial or economic classification of breeds, breeding and breeding work, sheep breeding zones of different directions in the breed zoning of Kazakhstan, intensive fattening and feeding of sheep, wool, meat and dairy sheep breeding, methods of increasing the meat, wool and dairy productivity of small cattle are considered.*

### Purpose of studying of the discipline

*Formation of students ` understanding of the technology of production of goat products.*

### Learning Outcomes

*ON 2 Apply modern methods and techniques of keeping, feeding, breeding and efficient use of animals, rationally use feed, hayfields, pastures and other forage lands and own various methods of harvesting and storing feed.*
*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 6 To use the biological characteristics of animals that have a decisive influence on the technology of production of animal products.*

### Learning outcomes by discipline

*1. Demonstrates knowledge and skills in sheep production technology*
*2. Assesses the biological and economic characteristics of sheep*
*3. Compares breeding and breeding work in sheep breeding*

### Prerequisites

*Breeding business in animal husbandry*

### Postrequisites

*Undergraduate practice*

## Undergraduate practice

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 15 |
| Knowledge control form | Total mark on practice |

### Short description of discipline

*Consolidation, expansion, deepening and systematization of theoretical knowledge acquired by students in the study of general scientific, professional disciplines based on the study of the activities of a particular enterprise, institution or organization and the acquisition of deeper practical skills in the specialty of future work, as well as adaptation to the labor market. Independent research work when collecting materials for a thesis. When conducting experiments, compliance with the main stages of research work, analysis of the results obtained.*

### Purpose of studying of the discipline

*Consolidation, expansion, deepening and systematization of theoretical knowledge acquired by students in the study of general scientific and professional disciplines based on the study of the activities of a particular enterprise, institution or organization and the acquisition of deeper practical skills in the specialty and profile of future work, as well as adaptation to the labor market*

### Learning Outcomes

*ON 5 Predict the consequences of changes in feeding, breeding and keeping of animals, determine modern technologies for the production of livestock products and reasonably make specific technological decisions.*
*ON 8 To use the laws, methods and techniques of genetics, breeding and biotechnology, to offer and defend their point of view when choosing modern genetic and biotechnological methods in breeding work.*

### Learning outcomes by discipline

*1. Demonstrates practical skills in the specialty of future work*
*2. Evaluates the research work when collecting materials for the thesis*
*3. Compares the stages of research work*

### Prerequisites

*Internship II*

### Postrequisites

*Final examination*

## Internship III

| | |
|---|---|
| Discipline cycle | Profiling discipline |
| Course | 4 |
| Credits count | 15 |
| Knowledge control form | Total mark on practice |

### Short description of discipline

*Consolidation of theoretical knowledge in the studied disciplines, familiarization of students with the nature and features of their future*

*activities based on the development of professional skills and gaining professional experience both within a single organization and in animal husbandry industries. Practical work with modern technologies for the production of livestock products, assessment of the level of state support for the agricultural sector of the economy, technologies for the primary processing of livestock products and basic methods for determining their quality.*

## Purpose of studying of the discipline

*Consolidation of theoretical knowledge in the studied disciplines, familiarization of students with the nature and features of their future activities based on the development of professional skills and gaining professional experience both within a single organization and in animal husbandry industries*

## Learning Outcomes

*ON 7 Develop and carry out measures to increase various production indicators of animal husbandry, analyze and plan technological processes as objects of management, the work of a team of performers, making financial and managerial decisions in conditions of different opinions.*

*ON 10 To develop and carry out measures for the management of technological processes for primary processing, standardization and certification of livestock products, commodity science and expertise of livestock raw materials, to assess the costs of ensuring product quality, adaptation of modern versions of quality management systems to specific production conditions.*

## Learning outcomes by discipline

*1. Demonstrates practical work with modern technologies for the production of animal products*

*2. Assesses the level of state support for the agricultural sector of the economy*

*3. Compares the technology of primary processing of animal products and their qualities.*

## Prerequisites

*Internship II*

## Postrequisites

*Final examination*