CATALOG OF ELECTIVE DISCIPLINES

7M08 - Agriculture and Bioresources
(Code and classification of the field of education)

7M082 - Livestock
(Code and classification of the direction of training)

0811
(Code in the International Standard Classification of Education)

M132 - Livestock
(Code and classification of the educational program group)

7M08201 - Technology of Production of Livestock Products
(Code and name of the educational program)

Master
(Level of preparation)

set of 2024

Semey 2024

Developed
By the Academic Committee of the EP
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Information management systems in animal husbandry

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

Short description of discipline
Formation of knowledge for working with information and control systems used in animal husbandry. The discipline is aimed at studying information management in animal husbandry, knowledge of specialized software for agribusiness, mastery of multifunctional information and control systems in the agro-industrial complex ("IAS", "ISH"). The SELEX system (breeding, economics, system) includes subroutines for optimizing breeding, veterinary and preventive work, feed use, optimization of technology in animal husbandry, etc.

Purpose of studying of the discipline
To teach undergraduates to apply modern information technologies for the collection and analysis of primary zootechnical data of breeding work in animal husbandry

Learning Outcomes
ON2 Apply information and communication technologies in animal husbandry.

Learning outcomes by discipline
1. Formation of work with information and management systems in animal husbandry
2. Provision of specialized agribusiness programs in animal husbandry
3. Provides programs to optimize technologies in animal husbandry

Prerequisites
Bachelor

Postrequisites
Innovative technologies of livestock products

Information technology in animal husbandry

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

Short description of discipline
Formation of knowledge for the use of information technologies in the management of zootechnical and veterinary preventive work, control of the productivity of the dairy herd, calculation and analysis of operational and technological indicators of the farm, analysis of animal husbandry technologies. The latest achievements of science in the development of technology for the production of animal products using information technology and the processing of research results, the correct use of information on the subject under study on the global Internet are considered.

Purpose of studying of the discipline
Mastering by undergraduates of modern information technologies used in animal husbandry.

Learning Outcomes
ON2 Apply information and communication technologies in animal husbandry.

Learning outcomes by discipline
1. Application of zootechnical and veterinary-preventive works on the farm
2. Calculation and analysis of operational and technological indicators of processing products on the farm
3. Processing of the latest scientific achievements and research results in the production of livestock products

Prerequisites
Bachelor

Postrequisites
Innovative technologies of livestock products

Computer modeling in animal husbandry

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

Short description of discipline
The formation of knowledge on the basics of computer modeling in the production of animal products involves the use of various technologies. The discipline examines the types and types of models, the structure of the modeling process, the role of models in the study of complex systems, the systematization and classification of models, the basic methods of constructing and analyzing model systems in animal husbandry, computer modeling in simulation programs MatLab and MathCAD

Purpose of studying of the discipline
Training of undergraduates in methods of modern assessment of breeding qualities of animals and the formation of competencies necessary for methodological approaches to the analysis, planning and modeling of the breeding process in animal husbandry to increase its effectiveness

Learning Outcomes
ON2 Apply information and communication technologies in animal husbandry.

Learning outcomes by discipline
1. Formation of knowledge on computer modeling in the process of production in animal husbandry and poultry farming
2. Be competent in relation to the types of modern models and the structure of their processes in farms
3. To consider the main methods of construction and analysis of model systems in animal husbandry and computer modeling in

programs

Prerequisites

Bachelor

Postrequisites

Innovative technologies of livestock products

Research technique in animal husbandry

Discipline cycle	Basic disciplines
Course	1
Credits count	7
Knowledge control form	Examination

Short description of discipline

The course is aimed at mastering knowledge and practical skills in conducting scientific research in animal husbandry. The general methodology of conducting scientific research, specific methodological techniques and methods of setting up zootechnical experiments on various types of farm animals, planning and conducting an experiment, logical analysis of the results of experience and drawing conclusions, stages of introducing research work into agricultural production are considered.

Purpose of studying of the discipline

The study of theoretical knowledge and practical skills in the organization and conduct of scientific research in animal husbandry using modern methods of setting zootechnical experiments

Learning Outcomes

ON3 Evaluate and choose the means and methods of scientific research, plan the process of conducting scientific research.

Learning outcomes by discipline

1. Aimed at acquiring skills in scientific research in animal husbandry.
2. To possess specific methodological techniques and methods of setting different experiences on types of farm animals
3. Logical analysis and summing up of the results of the conducted experience

Prerequisites

Bachelor

Postrequisites

Modern technologies in production of poultry farms

Methodology of scientific-research work

Discipline cycle	Basic disciplines
Course	1
Credits count	7
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at mastering knowledge when choosing the means and methodology of scientific research: treatment, familiarization, direct use, its reproduction and production of new knowledge. The course examines philosophical aspects, methodological foundations of scientific knowledge, structures and main stages of scientific research, methodology of theoretical and experimental research, modeling issues in scientific research and helps to choose the right direction of scientific research.

Purpose of studying of the discipline

Mastering the basics of logical thinking necessary for the organization and implementation of research activities

Learning Outcomes

ON3 Evaluate and choose the means and methods of scientific research, plan the process of conducting scientific research.

Learning outcomes by discipline

1)To study the types of data, stages of organization and conduct of research, methods and techniques of data collection and analysis, techniques for preparing accounting documents and materials illustrating the results of the study.
2) Apply modern methods of searching, processing and using information, interpret and adapt the necessary information.
3) Identify and use practical skills of working with various sources of information, process and analyze theoretical and empirical material on the studied problem.

Prerequisites

Bachelor

Postrequisites

Modern technologies in production of poultry farms

Organization and planning of research

Discipline cycle	Basic disciplines
Course	1
Credits count	7
Knowledge control form	Examination

Short description of discipline

Formation of knowledge and skills of organization and planning of scientific research. The course of this discipline considers: topics, goals and objectives of scientific research; how to search, accumulate and process scientific information, analyze theoretical and experimental research and formulate conclusions and proposals; registration of experimental research results; implementation and effectiveness of scientific research, as well as rules for registration and protection of research results.

Purpose of studying of the discipline

Development of skills and abilities of a master`s student in planning and organizing research work

Learning Outcomes

ON3 Evaluate and choose the means and methods of scientific research, plan the process of conducting scientific research.

Learning outcomes by discipline
1. Formation of knowledge and skills of organization and planning of scientific research in the economy
2. Full knowledge of the search, generalization and processing of scientific information for work on the farm
3. Consider the rules for the implementation of scientific research and their effectiveness, as well as the registration and protection of research results
Prerequisites
Methodology of scientific-research work
Postrequisites
The research work of a student, including an internship and the implementation of a masters thesis I

The use of modern information systems in the compil

Discipline cycle	Profiling discipline
Course	1
Credits count	8
Knowledge control form	Examination

Short description of discipline
Formation of theoretical knowledge and practical skills about modern information technologies in animal feeding, feed evaluation and preparation of feeding rations. The history of the development of information technologies and systems, computer networks and telecommunications, the security of information technologies, the use of modern information systems in the preparation of feeding rations by animal species (sheep, cattle, horses, pigs, poultry) is considered.
Purpose of studying of the discipline
The use of modern scientific achievements in the field of feeding farm animals to increase productivity, reproductive capacity, environmental cleanliness and profitability of manufactured products
Learning Outcomes
ON5 Apply advanced technologies in the preparation of feeding rations, feed evaluation and animal feeding.
Learning outcomes by discipline
1. Possess modern information technologies for evaluating feed and compiling their feeding rations When feeding farm animals
2. Gaining knowledge about the history of the development of information technologies and systems in animal husbandry
3. Provides for the use of modern information systems in feeding livestock species through computer networks and telecommunications
Prerequisites
Information technology in animal husbandry
Postrequisites
Modern technologies of production of sheep products

Feeding fur animals

Discipline cycle	Profiling discipline
Course	1
Credits count	8
Knowledge control form	Examination

Short description of discipline
This discipline studies the organization of full-fledged feeding of fur-bearing animals with cellular content. The ways and means of eliminating the most acute problems are considered, using progressive feeding systems for predatory fur-bearing animals and rodents. Familiarization with the characteristics of feed products, compound feeds concentrates, dry type of feeding, the need of fur-bearing animals in minerals and vitamins, preparation and storage of feed.

Purpose of studying of the discipline
Formation of undergraduates` holistic view of the main objects of animal husbandry, various conditions of their maintenance and feeding, the specifics of ration preparation, breeding work in animal husbandry
Learning Outcomes
ON5 Apply advanced technologies in the preparation of feeding rations, feed evaluation and animal feeding.
Learning outcomes by discipline
1. Uses full-fledged feeding systems for fur-bearing animals and rodents
2. Carrying out breeding works in commodity animal husbandry
3. Competence in the technology of production of hunting products
Prerequisites
Information technology in animal husbandry
Postrequisites
Modern technologies of production of sheep products

Methods of breeding to increase the productivity of poultry

Discipline cycle	Profiling discipline
Course	1
Credits count	7
Knowledge control form	Examination

Short description of discipline
Mastering the methods of breeding and organization of breeding work in poultry farming in connection with the biological characteristics of birds and the production tasks of farms of various directions. Techniques and methods of improving breeds in order to increase the productive and breeding qualities of birds, methods of selection and evaluation by offspring, principles of selection in poultry farming, breeding by lines and families, hybridization of poultry are considered. Mastering the techniques of breeding and breeding work,

organization of productivity accounting.

Purpose of studying of the discipline

Formation of theoretical knowledge and practical skills of undergraduates necessary for the rational organization of technological processes of poultry meat production at poultry enterprises of industrial type

Learning Outcomes

ON7 Apply technologies to improve the gene pool of animals and birds.

Learning outcomes by discipline

1. Formation of knowledge and skills of organization and planning of scientific research in the specialty.
2. Registration of the results of the conducted experimental studies
3. Conceptualization of selected theoretical and experimental studies and conclusions and proposals;

Prerequisites

Methodology of scientific-research work

Postrequisites

Current problems of animal husbandry

Evaluation of the nutritional value of feed

Discipline cycle	Profiling discipline
Course	1
Credits count	8
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at scientific substantiation and practical application of progressive methods of increasing the nutritional value of feed. The process of preparing feed for analysis, methods for determining nutritional value and organoleptic evaluation of feed are considered. Analysis of the nutritional value of feed by chemical composition, energy and nutritional value, determination of their quality, taking into account the requirements of GOST standards, is carried out on modern devices and equipment.

Purpose of studying of the discipline

Formation of knowledge on the assessment of the nutritional value of feed, the biological foundations of full nutrition of animals and methods of its control, training in ways of organizing physiologically sound, standardized and cost-effective animal feeding

Learning Outcomes

ON5 Apply advanced technologies in the preparation of feeding rations, feed evaluation and animal feeding.

Learning outcomes by discipline

1. Aimed at scientific substantiation and practical application of methods to increase the value of animal feed
2. Consider methods for determining the value of feed and organoleptic evaluation of feed when harvesting animal feed
3. Analysis of chemical composition, energy and nutritional value of feed for compliance with GOST requirements

Prerequisites

Information technology in animal husbandry

Postrequisites

Modern technologies of production of sheep products

Breeding business at increase of productivity of animals

Discipline cycle	Profiling discipline
Course	1
Credits count	7
Knowledge control form	Examination

Short description of discipline

Formation of knowledge and practical use of the law of correlative variability, conjugacy of breeding characteristics in increasing the productivity of animals. The nature of the relationship between individual traits in the process of breeding work is considered; purposeful selection and selection of animals that combine negatively correlating traits well; in-depth breeding work to obtain high-quality breeding animals; the main forms of breeding work in purebred breeding; organization and planning of breeding work.

Purpose of studying of the discipline

Formation of theoretical knowledge and practical skills of undergraduates necessary for the rational organization of technological processes for the production of poultry eggs at poultry enterprises of industrial type

Learning Outcomes

ON7 Apply technologies to improve the gene pool of animals and birds.

Learning outcomes by discipline

1. Application in practice of the law of mating of breeding characteristics in breeding works
2. The organization and planning of breeding work in animal husbandry is considered.
3. Formation of the basis of breeding work in the breeding of purebred animals on the farm

Prerequisites

Methodology of scientific-research work

Postrequisites

Current problems of animal husbandry

Modern technologies in production of poultry farms

Discipline cycle	Profiling discipline
Course	1
Credits count	7
Knowledge control form	Examination

Short description of discipline

Formation of knowledge and practical skills on herd reproduction to ensure the modern level of production of eggs and poultry meat. The article considers an industrial herd of laying hens and broilers with certain genetic makings capable of ensuring high production performance of the enterprise; modern technologies that ensure the extension of the period of use of poultry; technological lines in feeding, watering, growing, production of eggs and poultry meat; mechanization and automation systems at poultry farms.

Purpose of studying of the discipline

Formation of knowledge and skills among undergraduates to ensure rational cultivation, maintenance and full-fledged feeding of poultry of various species, production of poultry products using achievements in the field of industry innovations

Learning Outcomes

ON6 To offer highly effective technologies for increasing the productivity of animals and poultry, to analyze the main methods for determining the quality of livestock products.
ON9 Apply modern technologies for processing animal products, evaluate the productive and breeding qualities of animals.

Learning outcomes by discipline

1. Organization of breeding work with poultry at breeding plants and in breeding farms reproducers;
2. Features of full-fledged poultry feeding;
3. Industry standards for egg and meat production processes;

Prerequisites

Methodology of scientific-research work

Postrequisites

Current problems of animal husbandry

Innovative technologies for primary processing of milk

Discipline cycle	Profiling discipline
Course	2
Credits count	8
Knowledge control form	Examination

Short description of discipline

The discipline is aimed at studying the basic and innovative technologies of primary milk processing. The methods of determining the quality of milk, methods of storage and transportation, pasteurization of milk in modern conditions, waste- free technology of milk processing, processing of all by-products (skimmed milk, buttermilk, whey) into quality products, veterinary and sanitary examination of milk, standardization and certification of milk, environmental problems in milk processing are considered.

Purpose of studying of the discipline

Formation of necessary theoretical and practical knowledge among undergraduates and acquisition of skills and abilities in the field of primary milk processing technology, the ability to use regulatory and technical documentation

Learning Outcomes

ON8 To develop new technologies in the breeding of farm animals and poultry, to investigate and evaluate the breeding and economic purpose of animals.

Learning outcomes by discipline

1. Studies basic and innovative technologies of primary milk processing
2. Methods for determining the quality of milk are used in the storage and transportation of milk in modern conditions
3. Conducts veterinary and sanitary examination of milk

Prerequisites

The use of modern information systems in the compil

Postrequisites

Research scientific training

Crossbred sheep breeding

Discipline cycle	Profiling discipline
Course	2
Credits count	7
Knowledge control form	Examination

Short description of discipline

Formation of scientifically-based ideas about modern technologies in crossbred sheep breeding. The discipline considers: the history of the emergence of semi-fine crossbred sheep breeding; breeding work in crossbred sheep breeding; factory lines and breeding groups; breeding of meat and wool breeds with crossbred wool; methods of comprehensive assessment and techniques of wool research, production classification and procurement standards for wool; economic significance and prospects for the development of crossbred sheep breeding.

Purpose of studying of the discipline

The formation of undergraduates` skills in assessing the productive and breeding qualities of crossbred sheep, the use of breeding methods, the development of breeding work plans, the use of modern technologies for the production of sheep products

Learning Outcomes

ON4 To develop methods of comprehensive assessment and effective use of modern biologically based technologies for the production of animal products.

Learning outcomes by discipline

1. Forms scientifically based ideas about modern technologies in sheep breeding
2. Considers breeding breeding works in crossbred sheep breeding
3. Considers the economic significance and prospects for the development of crossbred sheep breeding

Prerequisites

Innovative technologies of livestock products

Postrequisites

Research scientific training

Modern technology of production of meat and milk cattle

Discipline cycle	Profiling discipline
Course	2
Credits count	8
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at studying modern ways and methods of improving the productive and breeding qualities of cattle, the organization and management of modern technological processes in cattle breeding. The organization and systems of milk production, specialization of dairy cattle breeding, the essence of milk production technology, modern technology of beef cattle cultivation, methods of intensive fattening, specialized beef cattle breeding, its productive, economic and technological features are considered

Purpose of studying of the discipline
To familiarize undergraduates with innovative technologies in the field of animal husbandry, namely in the production of meat and milk of cattle, ways to improve quality and the ability to compete in a market economy

Learning Outcomes
ON8 To develop new technologies in the breeding of farm animals and poultry, to investigate and evaluate the breeding and economic purpose of animals.

Learning outcomes by discipline
1. Origin, evolution and classification of cattle breeds;
2. Exterior, constitution and interior of cattle;
3. Dairy productivity of cattle;

Prerequisites
The use of modern information systems in the compil

Postrequisites
Research scientific training

Modern technologies of production of sheep products

Discipline cycle	Profiling discipline
Course	2
Credits count	7
Knowledge control form	Examination

Short description of discipline
The discipline is aimed at mastering modern technologies for the production of sheep products. The course examines: the current state of the global sheep gene pool, effective technologies for the production of meat, wool, milk; production of sheep products on an industrial basis using progressive intensive technologies, assessment of the quality of fur, fur and leather, smush products in modern conditions; methods of accounting for the productivity of the main and by-products of sheep breeding.

Purpose of studying of the discipline
In-depth study by undergraduates of the state of sheep breeding in our country and abroad, biological and economic characteristics of sheep, rational use of sheep to obtain environmentally friendly products at the lowest cost

Learning Outcomes
ON4 To develop methods of comprehensive assessment and effective use of modern biologically based technologies for the production of animal products.

Learning outcomes by discipline
1. Distinguish between the main directions of the sheep industry, breeds and pedigree zoning of sheep, exterior and constitutional features and types of sheep;
2. To recognize the rational technology of production of high-quality sheep products;
3. To investigate and evaluate the breeding and economic purpose of sheep herds, to organize proper feeding and maintenance of sheep;

Prerequisites
Innovative technologies of livestock products

Postrequisites
Research scientific training

Modern technology for the production of pig products

Discipline cycle	Profiling discipline
Course	2
Credits count	7
Knowledge control form	Examination

Short description of discipline
Formation of knowledge about the production of pig products on an industrial basis. The following are considered: concentration and specialization; complex mechanization and automation of labor processes; scientific organization and specialization of labor; creation of highly productive animals suitable for intensive use in specific conditions of detention; full and uniform provision of full-fledged feed in the assortment; effective use of feed products through the use of balancing additives and substitutes of industrial production

Purpose of studying of the discipline
Formation of undergraduates` skills in assessing the productive and breeding qualities of sheep, maintaining documentation on zootechnical accounting, planning the production of wool and mutton, developing breeding programs

Learning Outcomes
ON4 To develop methods of comprehensive assessment and effective use of modern biologically based technologies for the production of animal products.

Learning outcomes by discipline
1. considers modern technologies for the production of pig products in the professional field

2. forms knowledge about the production of pig products
3. provides for integrated mechanization and automation of labor processes in pig farming

Prerequisites

Innovative technologies of livestock products

Postrequisites

Research scientific training

Beef primary processing technologies

Discipline cycle	Profiling discipline
Course	2
Credits count	8
Knowledge control form	Examination

Short description of discipline

This discipline studies modern technologies of primary processing of cattle meat. The technologies of cattle slaughter, storage and transportation of carcasses, factors affecting the slaughter and meat productivity of livestock, innovative trends in the development of technologies and equipment for slaughter and primary processing of cattle, including resource-saving technologies for processing by-products, are considered.

Purpose of studying of the discipline

Formation of theoretical knowledge and practical skills of undergraduates in the field of process control at all stages of production – from the receipt of raw meat to the sale of finished products

Learning Outcomes

ON8 To develop new technologies in the breeding of farm animals and poultry, to investigate and evaluate the breeding and economic purpose of animals.

Learning outcomes by discipline

1. studies modern technologies of primary processing of cattle meat
2. provides technologies for slaughtering animals, storage and transportation of carcasses
3. resource-saving technologies for processing received indirect raw materials are considered

Prerequisites

The use of modern information systems in the compil

Postrequisites

Research scientific training