

**MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
"NJSC "S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY"**

Approve
NJSC "Saken Seifullin Kazakh
Deputy Chairman of the Management
Board Academic Activity-Rector
_____ A.M Abdyrov.
« _____ » _____ 2021.

CATALOG OF ELECTIVE COURSES

For students in groups of educational programs

Hunting and animal husbandry

Nur-Sultan, 2021

**MINISTRY OF AGRICULTURE OF THE REPUBLIC OF KAZAKHSTAN
"NJC "S. SEIFULLIN KAZAKH AGROTECHNICAL UNIVERSITY"**

Brief description of elective disciplines of the educational program

Financial management

1	Name of course	Zoology 2
2	Code of course	Z 1202
3	Cycle of course	BD
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	1
8	Prerequisites	School education in biology
9	Postrequisites	Animal morphology, animal physiology, biochemistry, genetics, biology of animals and birds, ethology of animals and birds, diseases of animals and birds
10	Course summary	The discipline studies the basic concepts and concepts of morphology, anatomy, biology, systematics, ecology of invertebrates and their role in the biosphere and human life, modern systematic positions of representatives of all types of the animal kingdom, the structure of the studied representatives, features of life cycles and ontogenesis, the level of organization of the studied objects, distribution, phylogeny.
11	Learning outcomes	to know the basic levels of organization of vertebrates, to form an idea of the importance of all stages of individual development of animals, basic knowledge in the field of biology in life situations; theoretical foundations and basic concepts of biological diversity sciences and physiological sciences; theoretical foundations and practical achievements of biology; fundamentals of bioethics; modern methods of research work with various taxonomic groups of animals. traditional and modern methods of observation, description, identification, classification, cultivation of animals of various taxonomic groups to be able to: use basic knowledge in the field of biological diversity sciences in life situations; predict the consequences of their professional activities apply the data obtained to solve scientific and practical problems; to collect, process and analyze the material for assessing the diversity of the animal world to identify the biological features of the species, the role of different groups of vertebrates in the evolution of the plant and animal world of the Earth; they will determine the external and internal structure of vertebrates, their species diversity, development, classification of animals, distribution, origin, their relationship with the environment of vertebrates, the importance of vertebrates in nature and for humans. possess the skills of analyzing cause-and-effect relationships in the relationship between vertebrates and the natural environment: the ability to work with vertebrate determinants, pose scientific questions, and conduct research on vertebrates.

1	Name of course	Genetics
2	Code of course	Gen 3228
3	Cycle of course	BD
4	Amount of credits	7
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Animal morphology, information and communication technologies, mathematics with the basics of biometrics, microbiology and virology
9	Postrequisites	biology of animals and birds, ethology of animals and birds, animal husbandry, wild breeding
10	Course summary	Genetics – the science of heredity and variability, the basis of modern biology. The course program also covers issues related to the needs of modern genetics and biostatistics: the study of ways to store genetic information (in viruses, bacteria, plants, animals, and humans); the analysis of ways to transfer hereditary information from one generation of cells and organisms to another; the identification of mechanisms and patterns of implementation of genetic information in the process of ontogenesis and the influence of environmental conditions on them; the study of the laws and mechanisms of variability and its role in the adaptation of organisms and the evolutionary process.
11	Learning outcomes	know the structure, structure, function and patterns of inheritance of chromosomes, genes and genome, changes in the characteristics of living organisms, methods of genetic engineering; classification of the source material according to the degree of selection study, hybridization, mutagenesis, polyploidy and haploidy; stages of the selection process; selection methods and selection for the most important properties; theoretical foundations of seed production and the essence and technology of variety replacement and variety renewal; - the essence of the technology of growing high-quality seeds on an industrial basis; varietal and seed control in seed production and the technique of variety testing Be able to: use the acquired knowledge in genetics and breeding of farm animals to improve existing and develop new highly productive breeds, analyze the types of gene abnormalities and chromosomal diseases, types of genetic variability. Have the skills to conduct biometric processing of primary breeding materials or experimental results. Have individual and group work skills. Be able to work with literature Possess: methods of improving and obtaining new breeds, obtaining highly productive animals resistant to diseases. The student must know and be able to use the knowledge gained to understand the peculiarities of heredity and variability of various organisms, to obtain and process data on the selection of wild animals.

1	Name of course	Animal morphology
2	Code of course	MZh 1226
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	1
8	Prerequisites	School education in biology
9	Postrequisites	Animal physiology, genetics
10	Course summary	The study of the structure of individual organs and systems of the body of animals and birds, necessary for understanding the biological processes occurring in the body of healthy animals. The study of the organism from the position of didactic methodology, in particular, taking into account the unity of the organism with the environment; the integrity of the organism; the relationship of form and function. The discipline "Animal Morphology" contains the following sections: osteology, syndesmology, myology, dermatology, splanchnology, angiology, organs of internal secretion, organs of hematopoiesis, nervous system, analyzers.
11	Learning outcomes	Know: the microstructure of tissues, organs and their relationship. - the anatomical structure of the body of animals and their specific feature. - topographic anatomy. - understand the logical connection of morphology with other professional disciplines and link them to professional activities. Be able to: prepare dry and wet anatomical preparations. - distinguish between the organs of different animal species. - analyze what has been studied and draw appropriate conclusions. Possess: anatomical research methods - knowledge of the morphology of animals that is important in practice. - histological methods of research

1	Name of course	Biochemistry
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2	Code of course	Bio 2205
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	Animal morphology, zoology
9	Postrequisites	biology of animals and birds, ethology of animals and birds, animal husbandry, wild breeding
10	Course summary	he discipline of animal and plant biochemistry studies the structure of biomolecules (amino acids, peptides, proteins), sugars, nucleosides, nucleic acids, fatty acids, vitamins and trace elements; the chemical basis of biological processes and the most important principles of molecular logic of living things; the main chemical components of the cell, the molecular basis of biocatalysis and heredity
11	Learning outcomes	To know: features of the structure of biomolecules (amino acids, peptides, proteins), sugars, nucleosides, nucleic acids, fatty acids, vitamins and trace elements; chemical bases of biological processes and the most important principles of molecular logic of living things; to understand the principles of the biochemical organization of animals, the laws of biochemical processes occurring in the body; to know the chemical composition of a living organism and biochemical processes. To be able to: identify the main chemical components of the cell, molecular basis of Biocatalysis and heredity; to have an idea about the structure and properties of the major types of biomolecules due to their biological functions.; To possess the methods of determination of chemical processes production reactions, modeling of biochemical processes in living tissue, the body; to work with the microscope; prepare and conduct biochemical experiments on the study of the processes and functions of the animal organism under the action of various environmental factors; Master the skills: - to justify the significance of biochemical phenomena as a theoretical basis for the system of techniques

1	Name of course	Ethology of animals and birds
2	Code of course	EZP 2206
3	Cycle of course	BD
4	Amount of credits	5

5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	zoology, animal morphology, animal physiology, biochemistry
9	Postrequisites	diseases of animals and birds, zoogeography, biotechnics and protection of natural resources, animal husbandry, wild
10	Course summary	The discipline studies the behavior of animals in natural conditions, the genetically determined (hereditary, instinctive) components of behavior, the dynamics of life processes, the influence on their manifestation of the nervous and endocrine systems, as well as the problems of evolutionary behavior, the development of the animal psyche in the process of phylogenesis and ontogenesis.
11	Learning outcomes	The student will know the animal behaviors of wild animals. Interaction of various disciplines in the science of animal behavior. Animal species, their nature, classification system, and evolution. Forms of individual behavior. Reproductive behavior. Community organization and social behavior. Behavior development. Genetics of behavior. Individual experience and the ontogenesis of behavior. Heredity and environment. Mechanisms related to behavior. Sensory-perceptual systems and functions. Neural mechanisms and behavior. Hormones and behavior. Evolution of behavior.

1	Name of course	Typology of hunting grounds
2	Code of course	TOU 3207
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Zoology, animal morphology, biology of animals and birds, ethology of animals and birds, diseases of animals and birds
9	Postrequisites	Wild breeding, animal husbandry

10	Course summary	The discipline typology of hunting grounds studies the main stages and periods of formation and development of the teachings about hunting grounds; the principles of classification of hunting grounds and the main taxonomic units of classification of hunting grounds (categories, classes, groups of types and types) and the rules for their allocation; the classification of feed by origin and methods of accounting for their stocks; the principles of bonitirovka hunting grounds.
11	Learning outcomes	The student will know the main stages and periods of formation and development of the teachings on hunting grounds, the principles of classification of hunting grounds and the main taxonomic units of classification of hunting grounds (categories, classes, groups of types and types) and the rules for their allocation. Bonitization of land and division of the territory of the farm into plots of various purposes.

1	Name of course	Hunting equipment
2	Code of course	Oho 3208
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Zoology, animal morphology, biology of animals and birds, ethology of animals and birds, diseases of animals and birds
9	Postrequisites	Wild breeding, animal husbandry
10	Course summary	The discipline of hunting management studies the methodology and organization of work on inter-farm hunting management; conducting inter-farm hunting management and biological and economic surveys; categories of inter-farm hunting management; organization of control of inter-farm hunting management; methods for calculating the optimal capacity of the hunting farm and the optimal density for the main types of hunting and commercial animals; methods for determining feed stocks and limiting factors; the carrying capacity of the hunting farm.

11	Learning outcomes	The student will know the methodology and organization of work on inter-farm hunting management; conducting inter-farm hunting management and biological and economic survey; organization of control of inter-farm hunting management; methods for calculating the optimal capacity of the hunting farm and the optimal density for the main types of hunting and commercial animals; methods for determining feed stocks and limiting factors; the carrying capacity of the hunting farm; Land bonitization and division of the territory of the farm into plots for various purposes.
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1	Name of course	Biotechnologies and protection of natural bioresources
2	Code of course	BOPB 3301
3	Cycle of course	SD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Biology of animals and birds, ethology of animals and birds, Typology of hunting grounds, hunting management, accounting of animals and birds, techniques for hunting animals and birds, conservation and environmental legislation
9	Postrequisites	Hunting dog breeding, wild breeding, animal husbandry
10	Course summary	Biotechnology and Protection of natural bioresources studies a set of measures aimed at improving the living conditions of game. Of these, the most important are the following: protection of game, feeding, improving the protective properties of land, selective shooting, regulation of the number of predators, Bioresources, their protection and use.
11	Learning outcomes	The student will know the theoretical foundations of managing the life of animals in a state of natural freedom, developing the skills of a creative approach to the arsenal of biotechnical methods of influencing animals and their habitat, forming the skills of direct implementation of biotechnical measures in the conditions of specific natural and economic regions. Natural bioresources, their protection and use

1	Name of course	Animal husbandry
2	Code of course	Zve 4307
3	Cycle of course	SD
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	animal morphology, zoology, biology of animals and birds, ethology of animals and birds, diseases of animals and birds
9	Postrequisites	accounting of animals and birds, techniques for the extraction of animals and birds, biotechnologies and protection of natural resources
10	Course summary	Fur farming is an independent and promising branch of agriculture. Fur-bearing animals bred in caged conditions are the product of human labor and differ significantly from their wild relatives, both in terms of productivity, and in terms of keeping and feeding conditions.
11	Learning outcomes	Students should know the theoretical foundations of breed formation in animal husbandry, the organization of breeding work in the new economic conditions, the main ways of keeping and feeding animal husbandry objects. This discipline introduces students to the ways to determine and use effective methods of selection and selection, to determine the sex at an early age of animals, to use the feeding standards and the preparation of diets for all animal husbandry facilities.

1	Name of course	Wild breeding
2	Code of course	Dich 4305
3	Cycle of course	SD
4	Amount of credits	8
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	Animal morphology; biotechnology and protection of natural bioresources, biology of animals and birds, ethology of animals and birds
9	Postrequisites	Animal morphology; biotechnology and protection of natural bioresources, biology of animals and birds, ethology of animals and birds
10	Course summary	Wild breeding studies a set of measures aimed at improving the living conditions of game. Of these, the most important are the following: protection of game, feeding, increasing the protective properties of land, selective shooting, regulation of the number of predators, wild breeding.
11	Learning outcomes	Wild breeding studies a set of measures aimed at improving the living conditions of game. Of these, the most important are the following: protection of game, feeding, increasing the protective properties of land, selective shooting, regulation of the number of predators, wild breeding.

1	Name of course	Accounting for animals and birds
2	Code of course	Accounting for animals and birds
3	Cycle of course	SD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	biology of animals and birds, ethology of animals and birds, field research in hunting, typology of hunting grounds, hunting management
9	Postrequisites	biotechnologies and protection of natural resources
10	Course summary	Accounting for hunting animals studies the methodological foundations of various methods of accounting for hunting animals, their classification and methods of processing the results obtained.
11	Learning outcomes	Students should know the main stages of the development of hunting taxation as a science, modern methods of accounting for the number of hunting animals, the main methods of processing the materials of accounting and determining the number of hunting commercial animals in a particular farm, district, region, republic, the order of organization and conduct of accounting work.

1	Name of course	Techniques for hunting animals and birds
2	Code of course	TDZP 3304
3	Cycle of course	SD
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	biology of animals and birds, ethology of animals and birds, field research in hunting, typology of hunting grounds, hunting
9	Postrequisites	biotechnologies and protection of natural resources
10	Course summary	The discipline technique of hunting animals and birds studies the classification of methods and tools for obtaining hunting animals; the feasibility of using a particular tool for obtaining hunting and commercial animals; hunting equipment and inventory used in the extraction of hunting and commercial animals and the basics of marking on hunting, the basics of economic evaluation of tools and methods for obtaining hunting and commercial animals.
11	Learning outcomes	Students should know the safety precautions when using hunting rifles on hunting; classification of methods and tools for obtaining hunting animals, the feasibility of using a particular tool for obtaining hunting and commercial animals, hunting equipment, inventory used in the production of hunting and commercial animals.

1	Name of course	Trophy case with the basics of taxidermy
2	Code of course	TDOT 4308

3	Cycle of course	SD
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	Biology of animals and birds, ethology of animals and birds, morphology of animals
9	Postrequisites	Accounting of animals and birds, technology of extraction of animals and birds, biotechnics and protection of natural bioresources, commodity science and technology of primary processing of leather and fur raw materials
10	Course summary	Trophy business with the basics of taxidermy in the course of studying the discipline, the following tasks are studied: the study of the selection of raw materials for the production of stuffed animals and trophies, the correct assessment of the condition of raw materials, the development of methods for making stuffed animals, the development of methods for making stuffed birds; mastering the skills for making hunting trophies of animals, birds
11	Learning outcomes	The student must know the features of the biology of animals that are objects of trophy hunting, methods and rules for processing the trophy at the place of its extraction, requirements for the quality and design of trophies, methods for evaluating hunting trophies, subspecies of the main hunting animals and features of evaluating trophies from different species, biology of animals and birds that are objects of trophy hunting, requirements for the quality and design of trophies, processing rules, methods for making stuffed animals of various animals, birds, fish, amphibians. Tools used in taxidermy. Modern methods in taxidermy.

1	Name of course	Hunting and animal husbandry
2	Code of course	TDOT 4308
3	Cycle of course	SD
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management

7	Year	4
8	Prerequisites	Biology of animals and birds, ethology of animals and birds, morphology of animals
9	Postrequisites	Accounting of animals and birds, technology of extraction of animals and birds, biotechnics and protection of natural bioresources, commodity science and technology of primary processing of leather and fur raw materials
10	Course summary	Trophy business with the basics of taxidermy in the course of studying the discipline, the following tasks are studied: the study of the selection of raw materials for the production of stuffed animals and trophies, the correct assessment of the condition of raw materials, the development of methods for making stuffed animals, the development of methods for making stuffed birds; mastering the skills for making hunting trophies of animals, birds
11	Learning outcomes	The student must know the features of the biology of animals that are objects of trophy hunting, methods and rules for processing the trophy at the place of its extraction, requirements for the quality and design of trophies, methods for evaluating hunting trophies, subspecies of the main hunting animals and features of evaluating trophies from different species, biology of animals and birds that are objects of trophy hunting, requirements for the quality and design of trophies, processing rules, methods for making stuffed animals of various animals, birds, fish, amphibians. Tools used in taxidermy. Modern methods in taxidermy.

1	Name of course	Hunting and animal husbandry
2	Code of course	AYaDSC 2211
3	Cycle of course	BD
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	Foreign language level B1-B2
9	Postrequisites	Subjects in the specialty in a foreign language
10	Course summary	The course program is designed for the amount of teaching-180 hours, of which: 54 hours-for classroom work and 108 hours-for independent work. The course ends with a comprehensive exam.

11	Learning outcomes	According to the results of the development of the program, the student, depending on the level of training, at the time of completion of the course, reaches the level B1-(IELTS 4.0-5.0) or B2 - (IELTS5. 5-6. 0) and the formed skills for solving problems of professional, interpersonal and intercultural interaction
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1	Name of course	Fundamentals of Economics
2	Code of course	OE 2118
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	mathematics with the basics of biometrics
9	Postrequisites	production practice
10	Course summary	The course program is designed for the amount of teaching-150 hours, of which: 50 hours-for classroom work and 100 hours-for independent work. Introduction. Economic needs, goods, and resources. Types and forms of ownership. Types of economic systems. Market. The mechanism of its functioning. The law of demand and the behavior of buyers. The law of supply and the logic of business. Market equilibrium. A firm in a market economy. Economic fundamentals of business
11	Learning outcomes	Students should be able to use the basic concepts of economic theory in practice, knowledge of the main events in the history of the development of economic thought, the ability to analyze individual economic processes, establish relationships between these phenomena, determine the properties of economic entities; acquire skills in working with schemes, test tasks and problem solving;

1	Name of course	Basics of farming
2	Code of course	OFD 2215
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	Biology of animals and birds, ethology of animals and birds, botany with the basics of feed production, animal morphology, animal physiology, biochemistry
9	Postrequisites	Animal husbandry, wild breeding, fish farming
10	Course summary	The objectives of the course include the formation of a system of views and the assimilation of modern scientific knowledge in the field of the history of the development of farms in Kazakhstan, market relations and farming, the development of farming in Kazakhstan, the social development of the village: problems and trends, farming: world experience, the organization of farming for the production of milk and beef, pork, lamb, rabbit and poultry. Organizations of farming for the production of crop production. Organization of fish-breeding and animal-breeding enterprises
11	Learning outcomes	The training will be aimed at the formation of a scientific worldview of the physiological, zootechnical and technological competence of students in the field of agricultural production, promotes the development of classical and latest technologies for the production of livestock products, taking into account the physiological and productive characteristics of animals in small businesses

1	Name of course	Modeling of hunting farms
2	Code of course	MOH 4223
3	Cycle of course	BD
4	Amount of credits	4
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	Information and communication technologies, fundamentals of economics
9	Postrequisites	Typology of hunting grounds, hunting management, as well as when performing a thesis
10	Course summary	General information about economic and mathematical models and modeling. The main stages and techniques of modeling economic processes in the hunting industry. Types of economic and mathematical models used in hunting. Methods of building a reference plan and choosing the optimal solution to the transport problem. Simplex method
11	Learning outcomes	The student should know: methods of economic and mathematical modeling in hunting; - be able to make an economic and mathematical model of a production problem and find the optimal solution using computer applications, - analyze the results obtained and form concrete conclusions on improving the hunting economy

1	Name of course	Chemistry
2	Code of course	Him 2213
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	School database of natural science disciplines
9	Postrequisites	Trophy business with the basics of taxidermy, commodity science and technology of primary processing of leather and fur raw materials
10	Course summary	Basic concepts and laws of chemistry. The structure of the atom. Types of chemical reactions. The main patterns of reactions. Solutions. Electrochemical processes. Coordination connections. Equilibrium in a homogeneous system. Buffer capacity. Chemical thermodynamics and equilibrium. Chemical kinetics and electrochemistry. Two, three, and multi-component systems. Gravimetric analysis. Dispersed systems. Surface phenomena. Physical and chemical methods of analysis.
11	Learning outcomes	The student must: - understand the impact of various conditions on the flow of technological processes; - know the main sections of chemistry: physical and chemical methods of analysis, fundamentals of chemical thermodynamics, phase equilibrium, solutions, fundamentals of electrochemistry, chemical kinetics and catalysis; - be able to prepare solutions, determine the content of ions in the solution and their concentration, justify proposals for improving the technical and technological operations carried out, - learn the basic laws and their application in specific research objects; - acquire skills in conducting research, processing results and predicting the course of processes

1	Name of course	Mathematics with the basics of biometrics
2	Code of course	MOB 1209
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	1
8	Prerequisites	School course on the subject of mathematics, genetics
9	Postrequisites	ypology of hunting grounds, hunting management, biotechnologies and protection of natural bioresources
10	Course summary	the course of the discipline studies the issues of mathematical calculations, rules, basic concepts of probability theory and mathematical statistics, principles and methods of correlation, regression and variance analysis, analyze the results of experiments, observations, experiments, identify trends in the laws of the studied objects, apply statistical processing methods in practice, organize experimental and experimental work.
11	Learning outcomes	Development of students ' skills in mathematical calculation, application of mathematical statistics in solving scientific and practical issues in the field of biology, ecology, experimental work.

1	Name of course	Botany with the basics of feed production
2	Code of course	BOK 1210
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	1
8	Prerequisites	School course in the subjects of biology, geography
9	Postrequisites	Fundamentals of forestry, typology of hunting grounds, hunting management
10	Course summary	the course of the discipline studies the issues of morphology, systematics of plants, the theoretical foundations of regulating the production process of forage crops through the correct placement of crops on the soil in accordance with their biological requirements, improving the properties and regimes of soils through proper mechanical treatment, the use of chemical ameliorants and filling the needs of plants in food elements.
11	Learning outcomes	To study the structure of plant cells, vegetative and reproductive organs, morphology and systematics of plants, the main technological techniques and advanced technologies of forage harvesting, and issues related to the creation and use of highly productive pastures of intensive type

1	Name of course	Nature conservation and environmental legislation
2	Code of course	ZDPZ 4219
3	Cycle of course	BD

4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	Zoology, biology of animals and birds, ethology of animals and birds, zoogeography
9	Postrequisites	biotechnics and protection of natural bioresources, typology of hunting grounds, hunting management
10	Course summary	The objectives of the course include the formation of a system of views and the assimilation of modern scientific knowledge in the field of nature conservation and ecotourism: - global, regional and local environmental problems, the role of nature conservation in their solution; - nature reserves among other categories of specially protected natural areas; - environmental aspects of preserving the biological diversity of nature reserves; - anthropogenic impacts on the nature of nature reserves; - management of the dynamics of natural complexes of nature reserves; - regional system of protected natural areas
11	Learning outcomes	The student should know the issues of conservation of biological diversity of the Republic of Kazakhstan, strategies, action plans and measures for the conservation and balanced use of biological diversity. Objectives the purpose of natural parks, nature reserves, and nature reserves. The main legislative acts of the Republic of Kazakhstan in the field of nature protection, the Constitution on nature protection, the Land Code, the Water Code. The Law on Environmental Protection, on environmental Expertise, on the Protection of Rare and Endangered Species of Animals. Environmental standards and multinational corporations. The Red Book of Kazakhstan. International conventions in the field of environmental protection

1	Name of course	Diseases of animals and birds
2	Code of course	BZP 2216
3	Cycle of course	BD
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	Zoology, morphology of animals and plants, biology and ethology of animals and birds

9	Postrequisites	Biotechnologies and protection of natural bioresources, typology of hunting grounds, hunting management, animal husbandry
10	Course summary	The course program is designed for 150 hours (5 credits). the student learns such questions as nosology - questions of the doctrine of diseases, classification, causes of diseases and the mechanism of their development. The main issues of the development of non-communicable diseases in wild animals, birds and animal husbandry objects. Clinical and morphological signs of infectious (infectious, invasive) diseases of animals and birds, diagnosis, prevention and treatment measures. The impact of toxic products on the environment and wildlife. Veterinary and sanitary assessment of hunting and animal husbandry products
11	Learning outcomes	The student will know the issues of diagnosis, prevention, treatment and measures of elimination of diseases of various ethologies, Analysis of pathological processes, the spread of infectious and non-infectious diseases of animals and birds

1	Name of course	Fundamentals of forestry
2	Code of course	OLH 3218
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Zoology, botany with the basics of feed production, biology of animals and birds, ethology of animals and birds
9	Postrequisites	Typology of hunting grounds, hunting management, biotechnologies and protection of natural bioresources
10	Course summary	Forestry is a branch of the economy whose functions include: studying the history of forestry in Kazakhstan, classification of forms of forestry and accounting for forests, their reproduction, protection from fires, pests and diseases, regulation of forest use, control over the use of forest resources

11	Learning outcomes	The student will know the forest park economy, the botanical characteristics of various plant species, forestry activities, methods of growing planted forests, bonitrovki. Issues of selection work, rational use of forest resources
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1	Name of course	Ecology and life safety
2	Code of course	EBZh 2212
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	Zoology
9	Postrequisites	Biotechnologies and protection of natural resources
10	Course summary	The general concept of ecology and the basics of life safety, as a theoretical basis for the protection of society and nature. Relationships of organisms with the environment and living conditions. V. I. Vernadsky's Biosphere Concept. Definition of the modern noosphere. Environmental problems of our time. Fundamentals of life safety. The concept of the technosphere. Principles of ensuring the safety of human interaction with the living environment. Potential, real and realized hazards of natural and man-made origin
11	Learning outcomes	Ecology and the basics of life safety: the general concept of ecology as a theoretical basis for the protection of society and nature; the relationship of organisms with the environment; the biosphere-noosphere concept of V. I. Vernadsky; the definition of the concept of "sustainable development"; global environmental problems of our time, their causes and consequences; socio-ecological problems of our time and sustainable development; the current state and negative factors of the environment.

1	Name of course	Field research in hunting science
2	Code of course	EPIO 3221
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Biology of animals and birds, ethology of animals and birds, diseases of animals and birds
9	Postrequisites	Accounting of animals and birds, techniques for the extraction of animals and birds, biotechnologies and protection of natural bioresources
10	Course summary	General organizational and methodological guidelines. Development of a program for the out-ecological study of birds and mammals. Preparation of a program of biocenotic research and ecological and faunal review, Basic methodological principles. Observation diaries. Expedition and excursion equipment and equipment
11	Learning outcomes	The student will know the purpose of scientific research, the statement of experience, biological methods such as observation, experiment, comparative, descriptive, historical. How to perform statistical processing

1	Name of course	Commodity science and technology of primary processing of leather and fur raw
2	Code of course	TTPOKPMS 4311
3	Cycle of course	SD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	chemistry, morphology of animals, biology of animals and birds, ethology of animals and birds, accounting of animals and birds, technique of production of animals and birds
9	Postrequisites	Thesis (project)
10	Course summary	General concepts of leather and fur raw materials. Biological and commercial values of animal skins. Classification of leather and fur raw materials. Biological and commercial values of animal skins. Classification of leather and fur raw materials Hair and its structure. Hair structure: hair root, hair rods. Cuticular, cortical and core layer of the hair, the shape and length of the hair. Categories of hair Chemical composition of the skin. Squirrels. The amino acid composition of proteins. The main properties of skin proteins: collagen, keratin, elastin, reticulin, albumin, globulin. Variability of the hair and skin. Variability from the habitat. Variability from feeding and maintenance conditions. Geographical variability. Seasonal variability. Age, sex, and individual variability. Primary processing of leather and fur raw materials. Shooting skins. Degreasing, canning: the theoretical basis of canning methods. Vices of raw materials: lifetime vices, vices of shooting and degreasing hides, vices of canning, vices of transportation and storage. Commodity properties of leather and fur-fur raw materials. Weight, area, thickness, density, strength of hides and methods of their determination.
11	Learning outcomes	The student should know: have an idea of the marketable value of leather and fur raw materials; know the methods of primary processing and quality assessment of skins of domestic and hunting animals; an idea of the technology of processing (dressing, dyeing, finishing) of leather and fur raw materials for semi-finished products, practical skills in the procurement, acceptance, processing and further effective use of leather and fur raw materials. To apply the technology of processing of leather and fur raw materials; to sort and assess the quality of the leather and fur raw materials; to carry out the procurement of different types of leather and fur raw materials in accordance with the requirements of the standards; to produce primary processing, preservation, quality control of raw materials

1	Name of course	Hunting dog breeding
2	Code of course	OS 3310
3	Cycle of course	SD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Zoology, animal morphology
9	Postrequisites	Thesis (project) wild
10	Course summary	Maintenance and feeding of dogs, determination of pedigree, methods of breeding work, and methods of assessing the breeding and working qualities of hunting dogs, breeds of hunting dogs, breeding of hunting dogs, education and training of dogs, training of hunting dogs during hunting. The importance of hunting dogs in the hunting business, as well as the importance of purebred breeding and the need to improve working and breeding qualities
11	Learning outcomes	Students will learn modern methods of breeding, feeding, and breeding and breeding and training hunting dogs

1	Name of course	Biology of game animals
2	Code of course	BPZ 3225
3	Cycle of course	BD
4	Amount of credits	3
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Zoology, animal morphology, biology of animals and birds
9	Postrequisites	breeding, accounting of animals and birds
10	Course summary	The discipline "biology of game animals" studies the systematics, annual life cycle, nutrition, reproduction, sexual maturation of animals. Determines the habitat of animals, feeding, shelter from precipitation, search for feed for young animals, search for pairs during mating, selection of pairs, search and foraging for food, preparation for winter, cleaning of endo, ectoparasites, migration, distribution in the land.
11	Learning outcomes	The student will know the systematic, morphological and physiological features of game animals and the basic principles of natural classification, the general characteristics of classes, their similarities and distinctive features, the main ecological groups in connection with their adaptations to the environment.

1	Name of course	Microbiology and virology
2	Code of course	MV 2214
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	Botany with the basics of feed production, animal physiology, biochemistry, animal morphology, genetics
9	Postrequisites	Biology of animals and birds, ethology of animals and birds, diseases of animals and birds fish
10	Course summary	The section of general and private microbiology studies various groups of saprophytic and pathogenic microbes, their morphology, systematics and physiology, the influence of environmental factors on the vital activity of microorganisms and the role of microorganisms in the transformation of substances in nature, in production processes, in the life of healthy animals and their pathology, as well as agricultural microbiology: the role of microorganisms in animal nutrition (microflora of the gastrointestinal tract) and in the pathological process (pathogens of infectious diseases), the use of microorganisms in the preservation and storage of plant feed (hay, silage, haylage, etc.), the use of microbial synthesis products (protein, amino acids, vitamins, antibiotics, etc.) in animal nutrition, the microbiology of animal products (microbiology of milk and dairy and dairy products, meat, eggs, leather and fur raw materials), the microbiology of manure.
11	Learning outcomes	The student must possess modern methods of microbiological research, knowledge of the function of microorganisms and their role in nature, methods of preparation of preparations and staining, cultivation and isolation of pure cultures of microbes and effective use of the beneficial properties of microbes, as well as diseases.

1	Name of course	Fundamentals of ichthyology
2	Code of course	OI 3220
3	Cycle of course	BD
4	Amount of credits	5

5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	2
8	Prerequisites	zoology, animal morphology
9	Postrequisites	farming
10	Course summary	Characteristics of fish as an aquatic animal, the specifics of its structure and lifestyle, the relationship with the habitat, geographical distribution, growth characteristics and age of various species, and their dependence on environmental conditions, reproduction and population dynamics, nutrition and migration processes.
11	Learning outcomes	The student must know: professional terminology and form a basic professional vocabulary; consolidate and deepen knowledge of English grammar; be able to extract the necessary information from special texts; encourage the use of the acquired knowledge of professional English in practice, strive to independently improve foreign language skills

1	Name of course	Professionally-oriented foreign language
2	Code of course	POIYa 2224
3	Cycle of course	BD
4	Amount of credits	6
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	3
8	Prerequisites	Foreign language (English)
9	Postrequisites	English for academic purposes

10	Course summary	Development of hunting farms in Kazakhstan. Features of wild breeding. Nature reserves of the Republic of Kazakhstan. General biology: classification of animals and birds, nutrition, reproduction, growth and development, physiology, ecology, migration.
11	Learning outcomes	The student will know the morphological features of fish, the relationship of fish to environmental factors, fish biology, intraspecific and interspecific relationships, ecological groups of fish, taxonomy and economic significance. Ability to analyze ichthyobiological processes, distribution and habitat of fish and other hydrobionts. Draw conclusions about the patterns of biological processes, generalize the observed facts.

1	Name of course	Fish Farming
2	Code of course	Ryb 4217
3	Cycle of course	BD
4	Amount of credits	5
5	Level of preparation	Undergraduate studies
6	Department	Hunting and Fisheries Management
7	Year	4
8	Prerequisites	Zoology, Animal Morphology
9	Postrequisites	Typology of hunting grounds and hunting management
10	Course summary	The history of the development of fisheries in Kazakhstan. Biological features of fish grown in fish farms. Ecological groups of fish. Growth and development of fish. Factors affecting the vital activity of fish. Types and forms of fish farms. Fish breeding technology. Fertilizing ponds. Organization of fish feeding.

11	Learning outcomes	The student will know experimental and theoretical data in the field of fisheries, the biological basis of fish farming; the structure of pond fish farming; the technology of breeding and growing carp; production processes in the breeding and cultivation of other fish species; methods of intensification of pond fish farming; methods of prevention and control of diseases of pond fish; - combined and special types of warm-water pond farming.
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