BILA TSERKVA NATIONAL AGRARIAN UNIVERSITY

CATALOGUE
SUMMARY OF DISCIPLINES
BIOTECHNOLOGICAL FACULTY

Bila Tserkva-2019

Department of Genetics, breeding and selection of animals

Name of the discipline	**Animal genetics with biometrics**
Lecturer	Bushtruk Maryna Vitaliivna PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	1 course SP (bachelor's degree) 1, 2 semesters
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • the main stages of the history the science of genetics, its methods; • the role of organelles in cells in the transmission and implementation of hereditary information; • the structure of nucleic acids, characteristics of the genetic code; • the basic laws of the inheritance of qualitative and quantitative characteristics in monohybrid, dihybrid and polyhybrid crossings; • theoretical foundations of building genetic maps; • laws of inheritance of sex-linked traits; • the genetic nature of variability, its types, the meaning of spontaneous and induced mutagenesis, the specifics and features of the action of physical and chemical mutagens; • classification of mutations, causes of their occurrence and detection possibilities; • bases of immunogenetics, the concept of blood types of animals; • the main genetic predisposed pathologies of domestic animals and the ways of their detection; • the genetic essence of inbreeding and heterosis; • genetic basis of individual animal development; • genetic features of the structure of populations and their dynamics, the essence of genetic processes in populations; • peculiarities, possibilities and achievements of genetic engineering; • the main genes of the economic-useful signs of farm animals; • inheritance features and inherited variation of traits of different species animals. *Skills* • to carry out cytogenetic analysis of animals and detect the

	number of chromosomes; • to plan and analyze the results of the hybrid method in monohybrid, dihybrid and polyhybrid crossings; • to detect statistically significant deviations from the theoretically expected crossings; • analyze and compile genetic maps of chromosomes on the basis of analytical crossing; • paternity testing with genetic markers; • to detect animals with hereditary anomalies; • to carry out biometric analysis of variability of small and large sample of animals (as well as correlation, regression, dispersion, inheritance, repetition of traits); • to analyze genetic structure of populations; • to conduct genealogical analysis of animals.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	75 students
Topics of in-class activity	**Lectures** 1. Biometric methods in genetics. 2. Cytological bases of heredity. 3. Molecular basis of heredity. 4. Patterns of inheritance of traits in sexual reproduction. (Mendelism). 5. Inheritance features of the of allelic and non allelic genes. Lethal genes. 6. The chromosomal basis of inheritance. 7. The genetics of gender. 8. Inheritance of sex-linked traits. 9. Mutational variability. The mutation and their classification, its causes and methods. 10. Genetics of populations. Patterns of genetic structure of populations. 11. Immunogenetics and genetic polymorphism of proteins. 12. Genetics of immunity, anomalies and animal diseases. 13. Genetic basis of ontogenesis. 14. Genetics of animal behavior. 15. Special genetics of farm animals. 16. Genetic basis of animal breeding. 17. Genetic engineering and biotechnology. **Practical classes** 1. Variation series and the variation order. Graphic representation of

	the variation series. 2. Calculation of X, σ, Cv, and m_x, mσ, m_{Cv} for small samples (n < 30). Value and calculation of td and determination of P. 3. The role in selection and calculation of r, m_r, t_r for large samples (n ≥ 30). 4. Calculation r, m_r, tr for small samples (n <30). Role in the selection and calculation of R x/y and R y/x in large and small samples. 5. Use in selection and calculation of h^2, Sd and Es; rw. 6. Method X^2 (chi-squared test) in estamation of probability and difference between two groups of animals. 7. Cytological bases of heredity (cell structure, chromosomes, mitosis, meiosis, gametogenesis). 8. Graphic modeling of structure and synthesis of nucleic acids. 9. Graphic modeling of protein synthesis in a cell and gene mutations. Inheritance of traits in monohybrid crossing. 10. Inheritance of traits in dihybrid crossing. 11. Inheritance of traits in the interaction between allelic genes. 12. Inheritance of traits in the interaction between non allelic genes. 13. The genetics of gender. Inheritance of sex-linked traits. 14. The chromosomal theory of inheritance. Genetic maps of chromosomes. 15. Immunogenetics. Identification of origin. 16. Calculation of frequency of phenotypes, genotypes and concentration of genes. 17. Population Genetics and the Hardy-Weinberg Principle 18. Lethal genes.
Language of teaching	Ukrainian

Name of the discipline	**Animal breeding**
Lecturer	Stavetska Ruslana Volodymyrivna, Dr of agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	2, 3 courses (bachelor's degree) 4, 5 semesters
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • to evaluate the animals exterior and types of constitution; • to organize targeted growth of young animals; • to determine the breeding value of animals using different methods;

	• to use inbreeding and outbreeding; • to conduct an effective assessment of animals by origin (pedigrees); • to use methods of purebred selection, various types of cross-breeding and hybridization; • to have the skills to plan and organize of breeding; • to create of highly productive herd and economically profitable animals. *Skills* • to organize zootechnical and pedigree records; • to monitor the productivity of animals and poultry; • to calculate the efficiency of breeding in the herd; • to determine the genetic identification of animals, the coefficient of inbreeding and forms of heterosis; • to create individual and group pedigrees; • to conduct effective selection, to make breeding plans; • find the best genotypes among the phenotypes in herds, lines / families or breeds; • to evaluate young animals, males and females of different species of farm animals and poultry.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	55 students
Topics of in-class activity	**Lectures** 1. The definition and meaning of animal breeding and selection, their connection with other disciplines. The main stages of formation and development of the theory and practice of farm animal breeding. 2. Classification of farm animals. Time, place, sequence of taming and domestication of different species of animals. 3. Breed definition and meaning. Breed as a result of evolutionary process and human activities. 4. Ontogeny. 5. Constitution, the definition and meaning. 6. Exterior, the definition and meaning. 7. Interior, the definition and meaning. 8. Productivity of agricultural animals. 9. Assessment of agricultural animals' productivity. 10. Selection of agricultural animals. Theoretical and general selection. Definition and meaning of natural selection. Forms of artificial selection. The organization of animals' selection. 11. Animals mating. Theoretical bases, basic principles and tasks of mating. Forms of mating. 12. Methods of animal breeding. Classification of breeding

	methods of farm animals. Purebred selection: tasks, main methods; the ways to achieve progress in purebred selection. 13. Crossbreeding. Examples of crossbreeding systems. 14. Interspecies hybridization of animals: purpose, history, genetic meaning. 15. Animal breeding strategies and management. 16. Large-scale breeding in animal husbandry. **Practical classes** 1. Methods of estimation of animal growth and development. 2. Estimation of animal exterior and constitution. Defects of animal exterior. 3. Methods of estimation of exterior parameters; farm animal measurement. 4. Dairy production, registration techniques and evaluation. 5. Meat production, registration techniques and evaluation. 6. Assessment of poultry egg production. 7. Assessment of wool production. 8. Assessment of the reproductive performance of sows. 9. Assessment of working horses productivity. 10. Assessment of reproductive performance of dairy cattle. 11. Estimation of the breeding value of animals by origin. 12. Estimation of the breeding value of animals by its own phenotype. 13. Estimation of the breeding value of different species of animals by the offspring quality. Calculating of the selection effect in the herd. 14. Creation of animal pedigree. 15. Methods of animal identification. 16. Mating schemes. 17. Calculation of degree of inbreeding (according to Poosh-Shaporuzh), the coefficient of inbreeding (Rait-Kislovsky) and the coefficient of genetic identification (Rait). 18. Purebred selection. Estimation of the breeding value of animal lines and families. 19. Crossbreeding. Practical examples of crossbreeding systems. 20. Interspecies hybridization of animals. . Mating schemes. 17. Calculation of degree of inbreeding (according to Poosh-Shaporuzh), the coefficient of inbreeding (Rait-Kislovsky) and the coefficient of genetic identification (Rait). 18. Purebred selection. Estimation of the breeding value of animal lines and families. 19. Crossbreeding. Practical examples of crossbreeding systems. 20. Interspecies hybridization of animals.
Language of teaching	Ukrainian, English

Name of the discipline	Selection of farm animals
Lecturer	Tkachenko Serhii Vasyliovych PhD biological sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	1 course (master degree) 1 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • characteristics of populations, methods of their study; laws of management of the selection process at the population level; • results, resources and selection tasks; • biological and genetic characteristics of different species of farm animals; • principles and methods and assessment technique of animal breeding qualities; • specificity of breeding methods for improving the productive and breeding qualities of animals; • the theory and progressive methods of breeding work for the improvement of existing and the creation of new high-productive hybrids, lines, types, crosses and breeds of farm animals. *Skills* • to analyze the status of the populations and make a long-term forecasting for the development of a gene pool of the population under the influence of new factors; • to calculate the pedigree value of animals by origin, individual qualities, offspring qualities and a complex information; • to carry out a targeted selection in the herd; to develop models of breeding processes in a breed or a herd and to implement them in practice.
Description of the discipline	
P Prerequisites needed for studing the discipline **Students' limit in a group** **Topics of in-class activity**	No 15 students **Lectures** 1. Genetic basis of evolution. 2. Theoretical basis for selection.

	3. Efficiency of using biotechnology in animal husbandry. 4. Cytogenetics in the animal breeding. 5. Blood groups, protein polymorphism and its use in animal breeding. 6. Animal selection for natural resistance and selection for disease resistance. 7. Organization of breeding work and development of selection programs. 8. Program for the creation of new breeds and types based on the principles of large-scale selection with use of the best Ukrainian and world gene pool. 9. Achievements and directions of animal breeding development. 10. Selection of dairy cattle. 11. Principles of making system of breeding work in dairy cattle. 12. Selection of beef cattle. 13. Selection of pigs. 14. Selection of poultry. 15. Selection of sheep. 16. Selection of horses. **Practical classes** 1. Selection of repair calves by origin and its economic and useful importance. 2. Method of calculation of breeding value of bulls, cows and young animals. 3. Mating strategies in a herd. 4. Dairy cattle evaluation. 5. Beef cattle traits and their characteristics. 6. Genetic characteristic of lines of egg laying and meat chickens. 7. Sheep traits and their characteristics. 8. Selection of pigs by origin and its economic and useful importance. 9. Pig evaluation.
Language of teaching	Ukrainian

Name of the discipline	**Organization of breeding business**
Lecturer	Tytarenko Iryna Vasylivna, PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	2 course (master degree) 3 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • legislative basis and normative legal basis of all subjects of breeding business in livestock production; • the theory and progressive methods of breeding work for improving of the existing and create new high-productive hybrids, lines, types and breeds of farm animals. *Skills* • to use breeding resources effectively; • to solve the breeding business issues qualified; • to implement computer technology and modern methods for evaluating of animals in the breeding practice.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	15 students
Topics of in-class activity	**Lectures** 1. History, current state and prospects of development of breeding business in animal husbandry of Ukraine. 2. Law of Ukraine On Breeding Business in Animal Husbandry. 3. Law of Ukraine On Licensing Certain Types of Economic Activity. 4. State attestation in livestock breeding. 5. Identification and registration of animals in Ukraine. 6. State testing of breeding achievements in livestock breeding. 7. Structure of breeding service in animal husbandry of Ukraine. 8. The problem of preserving the gene pool of breeds. 9. Organization of breed tests in animal husbandry. 10. Development of selection programs and plans for breeding business and activities for their implementation. **Practical classes** 1. Organization of zootechnical and pedigree accounting as the basis of breeding business. 2. Requirements for work with breeding (genetic) resources.

	3. Licensing conditions for conducting of economic activity for the production and sale of breeding (genetic) resources. 4. Organization of state attestation and re-attestation of subjects of breeding business. 5. Identification of different types of farm animals. Making an order. 6. Procedure for submission and testing of breeding achievements. 7. Determination of the genetic progress of the herd and the pace of genetic improvement of the herd. 8. Current requirements for the publication of the State books of breeding animals. 9. Principles of planning the breeding program.
Language of teaching	Ukrainian

Name of the discipline	**Animal gene pool preserving**
Lecturer	Bustruk Maryna Vitaliivna PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	1 course (master degree) 2 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • to know the properties of populations, biological and genetic features of farm animals of the main species; • specification of breeding methods for improving the productive and breeding qualities of animals; • theory and progressive methods of breeding work in relation to the improvement of existing and the creation of new high-productive hybrids, lines, types, crosses and breeds of farm animals; • principles of gene pool preserving of uncompetitive breeds of a limited number; • biotechnological methods of farm animals gene pool preserving. *Skills* • to be able to analyze the state of the populations and

	make a long-term forecast for the gene pool development of the population under the influence of new factors; • to use the best samples in the ecological and adaptive breeding of high-productive breeds and inbreeding groups of farm animals; • to conduct research on the genetic improvement of local and endangered breeds of farm animals with the preservation of their biological identity; • breeding and genetic monitoring of the animal productivity potential, resistance, adaptability and study of parameters of their ontogenesis with complex one; • make in-situ methods for protecting the genetic resources of domestic animals.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	15 students
Topics of in-class activity	**Lectures** 1. Theoretical and methodological principles of preservation of breeds gene pool: historical aspect 2. Conceptual bases for the preservation of the gene pool of farm animals in Ukraine. 3. Species diversity of livestock in Ukraine and in the world. 4. Modern methods of breeding in the improving of the gene pool of farm animals. 5. Basic statements of selection and mating in animal populations for the long-term preservation of their gene pool. 6. Modern biotechnological methods of reproduction while preserving the gene pool of farm animals. 7. System of management of genetic resources in the conditions of globalization. 8. The main requirements for the use and preservation of the gene pool of different species of animals and their methodological problems. 9. Methodological problems of the use and preservation of genetic resources of poultry. 10. Methodological problems of the use and preservation of genetic resources of fur animals and rabbits. 11. Preservation of genetic resources of farm animals at risk. Organization of reserves and zoos. **Practical classes** 1. Diversity of gene pool objects and their categories. 2. Gene pool statuses. 3. The gene pool of endangered and local breeds of domestic animals. 4. Genetic resources of foreign breeds and their use in selection

	process. 5. Organizational-economic and legal bases for preservation of the gene pool of farm animals. 6. Basic parameters of gene pool micropropagation. 7. Preservation of genetic resources of farm animals at risk. Zoos and nature reserves. 8. The organization of reserves for local and endangered breeds. 9. Organization of the gene pool bank. 10. Programs for the preservation of genetic resources of farm animals by in situ methodology. General scheme of preservation program.
Language of teaching	Ukrainian

Academic discipline	**Information and computer systems in animal breeding**
Tutor	Sudyka Valerii Viktorovych PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Courses and semesters, when the discipline is planning to study	1 course (master degree) 3 semester
Faculties whose students are invited to study discipline	Biological-technological faculty
List of competencies and learning-related outcomes that discipline provides	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • the structure of modern information systems used in animal husbandry; • principles of creation of automated information systems used in animal husbandry; • principles and methods of databases creating for different species of animals; correction of databases on the influence of non-genetic factors; • evaluation of various parameters used when creating databases. *Skills* • to create databases for herds; • to correct of databases on the influence of non-genetic factors; • to evaluate the selection and genetic parameters. -

Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	15 students
Topics of in-class activity	**Lectures** 1. Introduction. Problems of breeding accounting, analysis of breeding ang genetic parameters and improvement of desirable characteristics of animals. 2. Information systems in animal husbandry. Automated information system "Incell". 3. Information and computer system "Seleks". 4. Management system dairy cattle breeding "Orsek". 5. Basic principles of creation of information systems (AIS) in dairy cattle breeding. 6. Estimation of the breeding work efficiency. 7. Automated information system in beef cattle. 8. Automated information system in pig farming. 9. Automated information system in poultry. **Practical classes** 1. Information systems in animal husbandry. Management system dairy cattle breeding "Orsek". Computer program "Lider-2". Dairy farm management program "Farm". 2. Basic principles of creation of information systems (AIS) in dairy cattle breeding. 3. Herd management software for dairy cattle UNIFORM-Agri. 4. Estimation of the breeding work efficiency. 5. Automated information system in beef cattle. 6. Automated information system in pig farming. Herd management software «BAZA». Program of operational management of production and breeding processes in pig farming "Intsel". 7. Automated information system in poultry.
Language of teaching	Ukrainian

Name of the discipline	**Population genetics**
Lecturer	Starostenko Iryna Serhiivna PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	1 course (master degree) 2 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • to know the genetic structure of a population; • characteristics of populations and research methods; • factors influencing population dynamics; • laws of managemen of the selection process at the population level; • factors and conditions of genetic sustainability of populations, mechanisms for solving the problem of biological diversity conservation; • mathematical models of population genetics of farm animals and their use in animal selection. *Skills* • to conduct a population genetic analysis; • to describe demographic and genetic parameters of populations; • to calculate the genotype frequencies; • the main factors of population dynamics and types of selection; • to implement Hardy-Weinberg law for real populations in solving problems of genetics, ecology, breeding and medicine; • to analyze the effects of inbreeding; • phylogenetic analysis; • comprehensive assessment of the gene pool of families and lines; • to model breeding and genetic parameters of livestock populations, to predict the state of their gene pool; • to make a long-term predictions for the evaluation of the gene pool of populations under the influence of certain factors.
Description of the discipline	

Prerequisites needed for studing the discipline	No
Students' limit in a group	15 students
Topics of in-class activity	**Lectures** 1. Introduction. Subject and content of discipline. 2. Types of populations. 3. Hardy-Weinberg law. The concept of a population as an integral system. Population structure. 4. Hardy-Weinberg-Castle law. 5. Factors of the dynamics of the genetic structure of populations. Variability and its influence on the genetic structure of populations. 6. Population cytogenetics of farm animals. 7. Inbreeding and genetic structure of populations. 8. Sex linked genes. 9. Breeds of farm animals and population. Gene pool. Genetic mechanism of new breeds creation. 10. Comparative genetics of the populations of farm animals of different species. **Practical classes** 1. Basic terms and conditions of population genetics; addition and multiplication laws of probability. 2. Confidence intervals (types of errors, representativeness heuristic and its properties, confidence interval and its properties). 3. Polymorphism. Methods of estimation of genetic variability. 4. Application of Hardy-Weinberg and Pearson laws. 5. Estimation of the frequency of phenotypic (the phenotypic of farm animals, its position, tasks and methods). 6. Types and basic forms of selection. 7. Inbreeding in the populations of plants, animals. 8. The importance and application of heterosis. 9. Single-factor dispersion analysis.
Language of teaching	Ukrainian

Name of the discipline	**Special genetics**
Lecturer	Starostenko Iryna Serhiivna PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	1 course (master degree), 1 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • the achievement of a special genetics on the heredity and variability of the quantitative and qualitative characteristics of different species of farm animals; • genetic consequences of hybridization, inbreeding, outbreeding and inbred depression; • genetic and environmental factors of formation of quantitative and qualitative characteristics, chromosomal abnormality; • coat colour genetics and markings in horse breeding and fur farming; • genetic control of the immune response; • the basis of hereditarily which determined the disease resistance; • genetic parameters of cattle, pigs, sheep and goats, horses, poultry, fish, fur animals and beneficial insects productivity; • factors of genetic progress in populations; • genetic consequences of breeding and genetic engineering technologies; • selection parameters of immune selection. *Skills* • to determine the genotype conditionality of the traits; • to estimate the genetic disease resistance and use it in the development of genetic methods of protection against them; • to determine the genetic basis of quantitative traits according to specific ranks and gene balance; • comprehensive estimation of the gene pool of families and lines; • to determine the basic genetic parameters of animal selection and directions of genetic progress; • use modern methods of estimating and predicting the gene pool of farm animals.

Description of the discipline	
Prerequisites needed for studing the discipline **Students' limit in a group**	No 15 students
Topics of in-class activity	**Lectures** 1. Introduction. Cattle genetics. 2. Horse genetics. 3. Pig genetics. 4. Sheep and goat genetics. 5. Fur animals and rabbit genetics. 6. Fish genetics. 7. Poultry genetics. 8. Insects genetics. **Practical classes** 1. Cattle genetics. 2. Heritability and repeatability of milk yield, milk fat and milk protein. 3. Horse genetics. Epistatic rows of horse coat color; Castle's hypothesis. 4. Genetic diseases and defective development in horses. 5. Genetic diseases in swine. 6. Sheep and goat genetics. 7. Fur animals genetics. 8. Rabbit genetics 9. Fish genetics. 10. Poultry and insects genetics.
Language of teaching	Ukrainian

Name of the discipline	**Biotechnology of reproduction in farm animals**
Lecturer	Babenko Olena Ivanivna, PhD agricultural sciences, assistant, department of genetics, breeding and selection of animals
Year of study, semester	2 course (master) 3 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge*

	• anatomical and topographical features of the structure of reproductive system of males and females of farm animals; • basics of neurohumoral regulation of reproduction processes of animals; • theoretical and practical aspects of generative cells and their cryopreservation; • theoretical and practical bases of generative cells anabiosis; • embryo transfer methods; • embryo cryopreservation (short-term and long-term). *Skills* • to operate procedure of bull management for semen collection; • to evaluate the semen quality and determine the possibility to use it for insemination; • to use different techniques and methods for semen washing and preservation in artificial insemination; • to prepare animals for embryo transfer.
Description of the discipline	
Prerequisites needed for studing the discipline **Students' limit in a group**	No 15 students
Topics of in-class activity	**Lectures** 1. Subject and methods of biotechnology of animal reproduction. 2. Basics of oogenesis in mammals. Adjusting the mammals reproduction. 3. Theoretical and practical bases of cryobiology of generative cells. 4. Use the embryo transfer in breeding programs. Embryo preservation. 5. Regulation of mammalian sex determination. 6. Receipt of mammalian embryos in vitro. 7. In vitro culture of the zygote and embryo. 8. Methods used in animal cloning, bizarre genetic engineering and transgenic animals. **Practical classes** 1. Methods for determination of sperm survival during the preservation. Semen survival rate for effective reproduction of animals.

	2. Semen cryopreservation technologies in the laminated granules and in plastic capillaries. 3. Methods of semen collection, their advantages and disadvantages. 4. Ovarian morphology of farm animals. 5. The embryo transfer in cows. 6. Laboratory techniques for donor cows selection and embryo transfer recipients. 7. Methods of superovulation and ejection of embryos in cows. 8. Methods of preparing a donor for superovulation. 9. Technique of embryos washing out. 10. Estimation of the suitability of embryos for transplantation. 11. Short-term and long-term storage of eggs and embryos. Selection of embryos and filling of plastic capillaries for short-term storage. 12. Basic methods of producing transgenic animals.
Language of teaching	Ukrainian

Name of the discipline	**Breeding and selection of fish**
Lecturer	Starostenko Iryna Serhiivna PhD agricultural sciences, associate professor, department of genetics, breeding and selection of animals
Year of study, semester	3 course (bachelor's degree) 5 semester
Faculties where the students are offered to study the discipline	Water bioresources and aquaculture
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • to know the organizational principles, the progressive system of development of fish farming in Ukraine and the role and place of methods of fish breeding and breeding business; • biological features of reproduction and fish development while natural and artificial breeding; • the methods of parental forms selection and features of different types of crossbreeding of fish farming objects; • to know principles of fish breeding in artificial conditions in the industrial way; • characteristics of carp and trout breeds, their breeding characteristics, types, to conduct interbreeding and inbreeding selection, industrial hybridization;

	• the system of breeding business, the formation of breeding herds, their keeping, treatment, transportation of the male fish and fish eggs; • rules of fish breeding by using of natural spawning, ponds, fish males, nesting, spawning, larvae catching and recording; • rules for artificial breeding of the carp family fish: carp, thistle, amur, selection and growing of their repair herds. *Skills* • be able to apply an appropriate method of fish breeding; • to plan and organize selective breeding work; • assessment, selection and fish mating and reproduction; • to apply technology of artificial fish breeding; to grow young fish and commercial fish; • technology of collection and preservation of fish pituitary glands; • to prepare gonad-stimulating solutions, to inject males and females, to create artificial environmental conditions for their sexual maturity; • to form groups of males, receive sexual products, inseminate of fish eggs, incubate it, disease prevention and control, growing and recording of larvae.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	29 students
Topics of in-class activity	**Lectures** 1. Introduction. The role of fish in human life. Origin and evolution of fish. 2. Use of patterns of fish development in their breeding. 3. The doctrine of the breed. Carp and trout breeds. 4. **N**atural fish breeding. 5. Artificial fish breeding. Ecological and physiological method of stimulation of maturation of sexual products in fish. 6. Carp and herbivorous fish breeding. 7. Breeding of trout and sturgeon, Polyodon spathula and some non-traditional objects of fish farming in Ukraine. 8. Fish selection system. Main directions and goals. 9. Organization of breeding business in fish farming. 10. Forms of breeding work in fish farming. 11. Choosing of parental forms. 12. Methods of breeding in fish farming. 13. Industrial hybridization in fish farming. 14. Selection of carp, trout and other fish.

Language of teaching	**Practical classes** 1. Periods and stages of ontogenesis of fish. Growth and development of fish. Methods of controlling the growth and development of fish. 2. Evaluation of fish exterior. 3. Methods of determining the fish fertility. 4. Method of pituitary injecting on male fish. 5. Ways of getting semen from male fish and ways to determine their quality. 6. Method of determining of percentage of fertilized eggs and percentage of developed eggs. 7. Fish production and fish pond productivity, its calculation. 8. Assessement of male fish and young fish. The main breeding traits in fish farming. 9. Time and and sequence the fish selection. 10. Conditions for the application of individual and group selection in fish farming. Mating schemes. 11. Use of crossbreeding in fish farming. Use of inbreeding and the results of its use. 12. Planning of artificial selection of carp and herbivorous fish. 13. Planning of artificial selection of Polyodon spathula and other sturgeon fish. 14. Planning of artificial selection of some non-traditional objects of freshwater fish farming in Ukraine **Ukrainian**

Name of the discipline	**Basics of genetics and breeding of farm animals**
Lecturer	Babenko Olena Ivanivna, PhD agricultural sciences, assistant, department of genetics, breeding and selection of animals
Year of study, semester	2 course (master) 3 semester
Faculties where the students are offered to study the discipline	Faculty of Veterinary Medicine
List of competencies and learning outcomes provided by the discipline	The result of learning the discipline is the acquisition by students of such knowledge and skills: *Knowledge* • the basis of disease resistance in farm animals and reasons of genetic disorders;

	• genetic polymorphism of protein systems and blood groups in animals; basic laws of genetic processes in populations of farm animals; • biological characteristics of different species of animals; • laws of growth and development of animals in different age; constitution and exteriors, interior of farm animals; • methods of breeding, selection and evaluation of sires by the offspring quality; • the impact of selection on the survival rate and health of animals; • inbreeding and heterosis effects. *Skills* • biometric methods for assessing the effectiveness of the use of veterinary, prophylactic and therapeutic measures against animal diseases; • genealogical analysis of herds in order to detect genetic resistance to diseases of animals and treatment of animal diseases; • to determine of genotype ratio and the frequency of semi-lethal and lethal genes frequency in herds; to develop measures for preventing the birth defects and abnormal offspring; • to determine the productivity of animals of different breeds and species, predisposition to diseases, inbreeding, breeding value of animals by their exterior; • to determine the growth rates of animals, to evaluate their breeding and productive qualities; • to find out methods for increasing the efficiency of production of products from animals.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	115 students
Topics of in-class activity	**Lectures** 1. Heredity and variability. Cytological and molecular basics of heredity. 2. Mutational variability. Classification of types of mutations. 3. Mendel's principles of inheritance. 4. Linked inheritance of traits. Sex-determination genetics. 5. Immunogenetics. 6. Animal anomalies. Genetic resistance of animals to diseases. 7. The origin of domestic animals, their changes under the selection process. Breeds. 8. Individual development of farm animals. 9. Constitution, exteriors and interior of farm animals. 10. Productivity of farm animals. 11. Selection of farm animals.

	12. Breeding methods of farm animals. 13. Animal selection for viability and resistance to diseases. **Practical classes** 1. Cell structure. Meiosis and its genetic significance. Mitosis. 2. Double-stranded structure of DNA. Transcription. Protein biosynthesis. 3. Transmission and expression of genetic information. 4. Mendelian patterns of inheritance. 5. Mutational variability. Occurrence, classification and properties of gene, chromosomal and genomic mutations. 6. Types of interaction of non-allelic genes. 7. Types of sex formation. Gender determination mechanisms. Types of chromosomal sex determination. 8. Individual development of farm animals. 9. Methods of estimating the exteriors and constitutions of farm animals. Undesirable traits of the exterior. 10. Recording and estimation of farm animals productivity. 11. Identification of animals. Zootechnical recording system. 12. Pedigrees. Pedigree classification. Making and analysis of pedigrees. 13. Farm animal selection. Define selection variants. The technique of mating schemes. 14. Farm animal breeding methods. Purebred selection. Outbreeding. Inbreeding. Coefficient of inbreeding is an indicator of the level of homozygosity of organisms, its calculation. 15. The technique of crossing schemes, determination of animal genotype. 16. Features of interspecific hybridization, their role in modern breeding.
Language of teaching	Ukrainian, English

Department of technology of feed, feed additives and feeding of animals

Summary of compulsory discipline

Name of the discipline	**Feeding high-yielding animals**
Lecturer	Bomko Vitalii Doctor of Agricultural Sciences, Professor, Head of department of technology of forages, feed additives and feeding of animals
Year of study, semester	1 course, masters, the 2nd semester
Faculties where the students are offered to study the discipline	The biologist - technological faculty
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* -features of digestion and assimilation of nutrients in highly productive animals; - qualitative characteristics of nutritional and dietary properties of forages and their influence on productivity, quality of production and reproductive capacity of high-yielding animals; - methods for assessing the full value of feeding high-yielding animals. *Skills:* - to determine the need for highly productive animals in nutrients; - to assess the quality, nutritional and dietary properties of feed for high-yielding animals; - to develop scientifically grounded rations; - organize the preparation of feed for feeding; - to provide optimal mode and feeding technique of high-yielding animals; - to assess the full value of feeding high-yielding animals; - to conduct an economic evaluation of the effectiveness of using different rations and types of feeding of high-yielding animals.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
	Topics of lectures:

Topics of in-class activity	1. Fundamentals of nutrition normalization of high-yielding animals. Key factors for an effective feeding program. 2. Scientific and practical aspects of increasing digestion and assimilation of nutrients in highly productive animals. Physiological and biochemical bases providing energy and nutrients of high-yielding cows 3. Feeding cows taking into account the physiological state and lactation phases. Organization of full feeding of cows in the summer. 4. Management of the processes of feeding dairy cows. Prevention of digestive and metabolism disorders in cows 5. A system of normalized nutrition when growing heifers. Normally feeding the pedigree bulls. Intensive rearing of young animals for meat and fattening of livestock 6. Full normalized feeding of pigs. Feeding buddies. Feeding high-yielding bare, pig and lactating sows. 7. Feeding the pigs-sysuns and the extinct piglets on grazing. Feeding young pigs with intensive growth and fattening. Effect of level and quality of feeding on productivity and quality of pork 8. Normalized feeding of bird. Bird Feed. Feeding high-performance adult bird of different species. Feeding high-yield young birds of different species. Feeding chickens, ducklings, caterpillars, broilers. Control of the full value of feeding birds **Topics of a practical training** 1. Development and analysis of scientifically substantiated formulations of fodder mixes for highly productive cows depending on the phase of lactation and the phase of a dry period using computer programs. Recipes of mixed fodders. Type and technique of feeding. Methods of controlling the full value of feeding high-yielding cows. 2. Development and analysis of scientifically substantiated prescriptions of fodder mixes for intensive feeding of young animals of cattle during growing and fattening depending on the breed's belongings. Recipes of mixed fodders. Types and types of final fattening. Methods of controlling the full value of feeding. 3. Development and analysis of scientifically substantiated rations for highly productive sows depending on the physiological state. Recipes of mixed fodders. Feeding technology. Methods of controlling the full value of feeding 4. Development and analysis of scientifically substantiated rations for intensive fattening of pigs depending on the type of fattening. Recipes of mixed fodders. Type and technique of feeding. Methods of controlling the full value of feeding. 5. Development and analysis of scientifically substantiated recipes of full-fodder mixed fodders and fodder mixes for high-

	yield adult bird of different species. 6. Development and analysis of scientifically substantiated recipes of full-fodder mixed fodders and fodder mixes for highly productive young birds of different species. Broiler chicken, broiler chicken brood, broiler chickpeas.
Language of teaching	Ukrainian, English

Summary of compulsory discipline

Name of the discipline	**Feeding high-yielding animals**
Lecturer	Bomko Vitalii Doctor of Agricultural Sciences, Professor, Head of department of technology of forages, feed additives and feeding of animals
Year of study, semester	1 course, masters, the 2nd semester
Faculties where the students are offered to study the discipline	The biologist - technological faculty
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* -features of digestion and assimilation of nutrients in highly productive animals; - qualitative characteristics of nutritional and dietary properties of forages and their influence on productivity, quality of production and reproductive capacity of high-yielding animals; - methods for assessing the full value of feeding high-yielding animals. *Skills:* - to determine the need for highly productive animals in nutrients; - to assess the quality, nutritional and dietary properties of feed for high-yielding animals; - to develop scientifically grounded rations; - organize the preparation of feed for feeding; - to provide optimal mode and feeding technique of high-yielding animals; - to assess the full value of feeding high-yielding animals; - to conduct an economic evaluation of the effectiveness of using different rations and types of feeding of high-yielding animals.
Discipline description	
Prerequisites needed for	

studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures:** 1. Fundamentals of nutrition normalization of high-yielding animals. Key factors for an effective feeding program. 2. Scientific and practical aspects of increasing digestion and assimilation of nutrients in highly productive animals. Physiological and biochemical bases providing energy and nutrients of high-yielding cows 3. Feeding cows taking into account the physiological state and lactation phases. Organization of full feeding of cows in the summer. 4. Management of the processes of feeding dairy cows. Prevention of digestive and metabolism disorders in cows 5. A system of normalized nutrition when growing heifers. Normally feeding the pedigree bulls. Intensive rearing of young animals for meat and fattening of livestock 6. Full normalized feeding of pigs. Feeding buddies. Feeding high-yielding bare, pig and lactating sows. 7. Feeding the pigs-sysuns and the extinct piglets on grazing. Feeding young pigs with intensive growth and fattening. Effect of level and quality of feeding on productivity and quality of pork 8. Normalized feeding of bird. Bird Feed. Feeding high-performance adult bird of different species. Feeding high-yield young birds of different species. Feeding chickens, ducklings, caterpillars, broilers. Control of the full value of feeding birds **Topics of a practical training** 1. Development and analysis of scientifically substantiated formulations of fodder mixes for highly productive cows depending on the phase of lactation and the phase of a dry period using computer programs. Recipes of mixed fodders. Type and technique of feeding. Methods of controlling the full value of feeding high-yielding cows. 2. Development and analysis of scientifically substantiated prescriptions of fodder mixes for intensive feeding of young animals of cattle during growing and fattening depending on the breed's belongings. Recipes of mixed fodders. Types and types of final fattening. Methods of controlling the full value of feeding. 3. Development and analysis of scientifically substantiated rations for highly productive sows depending on the physiological state. Recipes of mixed fodders. Feeding technology. Methods of controlling the full value of feeding

	4. Development and analysis of scientifically substantiated rations for intensive fattening of pigs depending on the type of fattening. Recipes of mixed fodders. Type and technique of feeding. Methods of controlling the full value of feeding. 5. Development and analysis of scientifically substantiated recipes of full-fodder mixed fodders and fodder mixes for high-yield adult bird of different species. 6. Development and analysis of scientifically substantiated recipes of full-fodder mixed fodders and fodder mixes for highly productive young birds of different species. Broiler chicken, broiler chicken brood, broiler chickpeas.
Language of teaching	Ukrainian, English

Name of the discipline	**Technology of formula-feed production**
Lecturer	Dyachenko Leonid Sydorovych doctor of agricultural sciences, Professor of department of technology of feed, feed additives and feeding of animals
Year of study, semester	5 course, masters, the 2nd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - the main international and domestic manufacturing techniques of compound feeds concerning their safety for livestock production; - structurally technological properties of components formula-feed raw materials, their nutritious power, prote§nova, amino-acid, lipidic, carbohydrate, vitamin and mineral value; - The existing standards and other normative documents on compound feeds of different types and their certification; - to what changes components of compound feeds are exposed during their technological processing; - ways bacterial obsemenennost of input products of compound feeds and finished goods and indicators of physical and chemical, microbiological and sanitary and hygienic assessment and their threshold limit values according to ND; - Main processing methods of production of compound feeds and feed additives, including: Cleaning, crushing, dosage and mixing of components, granulation of compound feeds, production technology of feed additives and premixes; - Main methods of laboratory researches of quality and technological properties of input products of compound feeds;

	- The basic domestic laws and normative documents on quality managements of compound feeds, feed additives and premixes. *Skills:* - to define quality formula-feed raw materials behind values and characteristics of quality indicators according to requirements of technology of preparation of compound feeds; - to develop and introduce recipes of preparation of compound feeds in production; - to develop parameters of technological processes, proceeding from specific conditions of production, and the system of estimation of their performance; - to enter into production new recipes of compound feeds with inclusion of new components for the purpose of increase in efficiency of the formula-feed industry and the field of livestock production; - to apply the main methods of laboratory researches of quality and technological properties of raw materials and finished goods; - to own the main technological methods of storage and control of quality formula-feed raw materials and finished goods.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Subjects of lectures** 1. A camp and the prospects of development of formula-feed production in Ukraine. 2. General characteristic of resource formula-feed base. 3. Technology to reception, placement and storage of raw materials. 4. Technology of purification of raw materials of organic and mineral impurity. 5. Technology of purification of raw materials of metalomagn_tny impurity. 6. Technology thermal and vologoteplovo ï processings of grain and other raw materials. 7. Technology of crushing of input products. 8. Technology of a dosage of components of compound feeds. 9. Technology of mixing of components. 10. Technology of preparation and introduction of liquid components to composition of fodder mixes and compound feeds. 11. Technology of input in compound feeds of fodder fats. 12. Technology introduction of a carbamide to compound feeds for ruminant.

	13. Technology of granulation of loose compound feeds. 14. Production technology of a formula-feed krupka. 15. General technological process of production of compound feeds. 16. Production technology of proteinaceous and vitamin and mineral additives and premixes **Subjects of a practical training** 1. Classification of compound feeds and feed additives. 2. Analysis of nutritional value of components and development of recipes of compound feeds. 3. Structurally mechanical vlastivostivost_ raw materials for production of compound feeds 4. Preparation of grain components for production of compound feeds 5. Calculations introduction of molasses, carbamide and fat to compound feeds 6. Drawing up recipes of the previous mixes for production of compound feeds 7. Developments of recipes of BVMD and premixes for their inclusion in compound feeds
Language of teaching	8. Practical occupations an excursion on formula-feed plant JSC Mironovsky Plant on Production of Grain and Compound Fe The Ukrainian

Name of the discipline	**The newest methods of researches in feeding of animals**
Lecturer	Dyachenko Leonid Sydorovych doctor of agricultural sciences, Professor of department of technology of forages, feed additives and feeding of animals
Year of study, semester	5 course, masters, the 2nd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - modern techniques of carrying out experiences from feeding of animals how to generalize and analyze their results, to formulate the corresponding conclusions and to make out scientific work; - the main directions and prospects of researches from feeding of animals in Ukraine and abroad, defining scientific and technical progress in livestock production; - zone features of forage production and feeding of certain types and statevov_kovy groups of animals that by results of researches to formulate the corresponding conclusions and

	recommendations; - the main international and domestic normative documents concerning safety of fodder means; - qualitative structure and biological and physical and chemical properties of various groups of forages zastosovuvat them in pilot studies; - principles of scientific methodology: objectivity, determinism, development, historicism, theory combination to practice and also methods carrying out scientific work. - the main directions of use of natural forages and fodder means of synthetic, chemical and microbiological synthesis in feedings of different types and groups of animals. - main approaches to creation of methods of increase in efficiency of use of nutrients of separate forages and in general diets of animals; - identification methods nedobroyak_snost_ fodder products; - the basic domestic laws and normative documents concerning quality management and safety of fodder products that are applied in experiences on feedings of animals. *Skills:* - to plan, to organize and conduct scientifically economic researches on all species and statevov_kovy groups of animals; - to process primary materials of researches and to carry out generalizations and conclusions by results of researches; - to apply the main methods of laboratory researches of quality and nutritional value of forages; - to make reports, foformlyat the thesis, the scientific publication (article, theses, etc.); - to make out applications for an invention and to protect intellectual property; -. to define cost efficiency of results of researches from feeding of animals.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. The short history of development of researches from feeding of animals. 2. The directions of researches about the feedings of animals defining scientific and technical progress in livestock production. 3. Modern requirements to statement of experiences from feeding of animals. 4. Scientific justification of statement of experience and creation

	of a working hypothesis. 5. The organization and performance of work on statements of an experiment on feedings of animals. 6. Conducting balance animal experiments on studying of digestibility of forages. 7. Biometric processing, analysis and assessment of results of a research. 8. Economic assessment of results of a research. 9. Experiences on cattle. 10. Experiences on sheep and goats. 11. Experiences on pigs. 12. Experiences on a bird of different types. 13. Experiences on bees. 14. Production check of results of a research. 15. Registrations of research work on results of researches from feeding of animals 16. Application for an invention and registration of the rights for intellectual property. **Topics of a practical training** 1. Formulation of a subject of researches from feeding of animals. Choice of a subject of a research on desire of the student. 2. Preparation of a general methodology for animal feeding studies. Definition of goals, tasks and methods, object and subject of research. 3. Scientific justification of statement of experience from feeding of page - of animals (at the choice of the student). Collecting material on a subject of researches. Creation of a working hypothesis and its protection 4. Development of the scheme and selection of animals for experiment on studying of digestibility by a method of replacement of forages. Methods of studying of digestibility of forages. Allocation of the periods in experience and establishments of their duration. 5. Development of the scheme and selection of animals for experiment on studying of digestibility by a method of inert substances. Methods of studying of digestibility of forages. Allocation of the periods in experience and establishments of their duration. 6. Development of methods of carrying out a balance experiment on ruminants. Development of the general scheme of experiments on studying of a metabolism in ruminants 7. Development of methods of carrying out a balance experiment on monogastrichny animals. Development of the general scheme of experiments on studying of a metabolism in monogastric animals 8. Development of methods of carrying out a balance experiment on a bird. Development of the general scheme of experiments on

	studying of a metabolism in a bird 9. Drawing up the scheme of experiment from feeding by a method of groups and selection of animals of cattle. Definition of the periods of experience and establishment of their duration. Selection of animals by a method of the Republic of South Africa of analogs and parallel groups of analogs. 10. Development of the scheme of feeding of experimental pigs depending on a research objective. Replacement of forages in diets by quantity dry substances, power and a protein of nutritiousness 11. Establishments of indicators for a research on sheep and goats and ways of their definition. Zootechnical indicators. Indicators of a metabolism and quality of products. Economic indicators of a research 12. Drawing up the scheme of experiment from feeding of a bird by a method of groups and selection of a bird. Definition of the periods of experience and establishment of their duration. Selection of individuals by the method of pair-analogues and parallel analogue groups. 13. Preparation of the experimental scheme for feeding on bees. Selection of bee colonies. Determination of periods and indicators for research 14. Development of forms for the consumption of feed and productivity of experimental animals. The journal of accounting for prescribed feeds, eaten and selected feces. Performance Log. A statement on the conduct of zootechnical analysis of feed and feces 15. Preparation of a scientific report, final work and their protection. Study of the structure and content of the master's thesis. Participation in the defense of final works. 16. Preparation of a scientific publication based on research materials. Study of the structure of scientific publication. Preparation of a scientific publication for publication, defense dissertation.
Language of teaching	Ukrainian

Name of the discipline	**Normalized animal feeding systems**
Lecturer	Kuzmenko Oksana Anatoliivna candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	masters, the 2nd year, the 3rd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* – physiological features of modern breeds, types and crosses of animals; – features of digestion and metabolism of energy, nutrients, minerals and biologically active substances in animals; – technique of operation and improvement of systems of complete feeding of animals for maintenance of high genetic potential; – peculiarities of animal feeding depending on technological features of production of various types of livestock products; – methods of control of the full value of feeding farm animals; – features of experiments on feeding of farm animals. *Skills:* – to determine the need for animals in energy, nutrients, minerals and biologically active substances; – to design rations and feeding systems for cattle, sheep, pigs, horses; – to apply modern domestic and foreign feeding systems for animals and poultry for various livestock production technologies; – to organize preparation of feed for feeding and feeding animals using different technologies; – to control over the level and value of feeding animals; – to develop recipes of mixed fodders, premixes, fodder mixes for the organization of full feeding of animals; – to apply the achievements of domestic and foreign science and best practices for the intensification of animal feeding; – to organize experiments on animal nutrition; – to present the results of their own theoretical and practical research on systems of normalized feeding.
Discipline description	
Prerequisites needed for studing the discipline	No

Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. Introduction to normalized animal feeding. Rational feeding of highly productive animals. 2. Normalized feeding of cattle and methods of its improvement. 3. Estimation of energy nutrition of feeds and rations in metabolic energy. 4. Modern approaches to the normalization of valuation protein animal nutrition. 5. Rationing of carbohydrates and fats in cattle feeding. The role of mineral nutrition for animals. Vitamins and their importance for the animal organism. 6. Modern feed materials for animal feeding. Conservation of feed with biologically active additives.ми. 7. Mixed fodder in animal feeding. Additives of different origin in animal feeding. Premixes in animal feeding. 8. Methods of research on metabolism and control of the full value of animal feeding. 9. Normalize feeding of cattle. Organization of modern normalize feeding of dairy cows. 10. Modern systems of normalized feeding of pigs. Organization of feeding of sows and young pigs for growing for meat on the basis of modern standards. 11. Modern systems of normalized feeding of sheep. 12. Modern systems of normalized feeding of horses. 13. Modern systems of normalized feeding of poultry. Organization of normalized feeding of hens, ducks, geese, turkeys, etc. according to modern norms. 14. Modern rabbit feeding systems. Modern feeding systems for fur animals. **Topics of practical classes** 1. Modern systems of normalized feeding of animals. 2. Rational feeding of highly productive animals according to modern norms. 3. The notion of rationing of cow feeding in the advanced countries of the world. 4. The latest system of nutritional value assessment of feed by chemical composition and amount of digestible nutrients. 5. Estimation of energy nutrition of feed by modern systems. 6. Estimation of the energy nutrition of the feed by the net energy of lactation (NEL). 7. Modern methods of evaluation of protein, carbohydrate, lipid, mineral and vitamin nutrition of feed. 8. The content of dry matter and structural and non-structural carbohydrates in feeds. The content of protein fraction in feeds.

	Content of mineral nutrients and vitamins in feeds. 9. Modern systems of normalized feeding of cattle. 10. Modern systems of normalized feeding of pigs. 11. Modern systems of normalized feeding of sheep. 12. Modern systems of normalized feeding of horses. 13. Modern systems of normalized feeding of poultry. 14. Modern systems of normalized feeding of rabbits. Modern systems of normalized feeding of for fur animals.
Language of teaching	Ukrainian

Name of the discipline	**Modeling of technological processes of animal feeding**
Lecturer	Tytariova Olena Mykhailivna candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	masters, the 2nd year, the 3rd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - regularities of realization of biological peculiarities of animals, their potential productivity; - the specifics of the organism's needs in the mineral and nutrients in water, depending on the physiological state and the level of productivity; - types of feeding and levels of consumption of different feeds; - modern breeding programs and technologies for the production and processing of livestock products; - mathematical programming and optimization of production processes, bases of economics, zoohygiene with the basics of designing and building livestock facilities, mechanization of production processes; - mathematical principles and a sequence of development of models that reflect the characteristics and components of the animal feeding process. *Skills:* - to combine abstract thinking with analysis and synthesis of technological processes; - to combine information and communication technologies; - to introduce different levels of animal nutrition and control the quality of feed and food; - to combine measures for raising the level of animal productivity and quality of their products;

	- to design and simulate technological processes in animal feeding; - to organize business and financial activity of livestock production; - apply knowledge of management and legislative provision of livestock production; - to apply biological, physiological and biochemical peculiarities of animals and their products in the selection of production technologies and research activities; - to use knowledge of the main directions and perspective of the livestock sector development in Ukraine, understanding of the problems in the agrarian business enterprises and the ability to apply foreign experience of agricultural development.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1.Modeling, as a method of scientific knowledge and a tool for managing the technological process in feeding animals. 2. The main stages of simulation. Scheme. Research of the simulated system and problem statement. 3. Mathematical methods and models as a means of making effective decisions. 4. Principle of construction of mathematical model of ration optimization for different species of agricultural land. animals 5. Features of construction of a mathematical model for optimizing the composition of compound feed for animals. 6-7.Specifics of modeling of technological processes of cattle feeding. 8. Features of modeling of technological processes of feeding of pigs 9. Features of simulation of technological processes of sheep feeding. 10. Features of simulation of technological processes of horse feeding. 11. Features of simulation of technological processes of poultry feeding. 12. Features of simulation of technological processes of fish feeding. 13. Features of simulation of technological processes of fur animal feeding. 14. Use gadgets to quickly solve technological issues of animal feeding. **Topics of practical classes**

	1-2. Familiarization with the method of solving optimization problems of linear programming in the environment of EXCEL. 3-4. Development of models for optimization of rations for different types of animals and their solution using programs on the PC on an example of the problem of optimizing rations for cows. 5-6.Development of models for optimizing the composition of recipes for mixed fodders for different types of animals and solving them using programs on the PC. 7.Development of optimization models for ration for cattle and their solution using programs on a PC. 8. Development of models of optimization of rations for pigs and their solution using programs on a PC. 9. Development of models for ration optimization for sheep and their solution using programs on the PC. 10. Development of models of optimization of rations for horses and their solution using programs on a PC. 11. Development of models of optimization of rations for poultry and solving them using programs on a PC. 12. Development of models of optimization of rations for fish and solving them using programs on a PC. 13. Development of models for ration optimization for fur animals and solving them using programs on a PC. 14. Use gadgets to quickly solve technological issues of animal feeding
Language of teaching	Ukrainian

Name of the discipline	**Safety, mycology and toxicology of feed**
Lecturer	Slomchynskyi Mykhailo Mykolayovych candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	masters, the 1st year, the 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - software and data processing methods for feeding animals, their health, feed composition; - directions and perspectives of development of the feed industry in Ukraine and abroad, peculiarities of feeding animals in different climatic zones; - basic English terminology in animal nutrition and

	environmental protection; - the main international and domestic normative documents concerning feed safety; - qualitative composition of different groups of feed; - what changes are the nutrients of feed during storage; - the main approaches to the development of new technologies for the production and storage of feed. *Skills:* - to apply the basic methods of laboratory research of quality and technological properties of feed; - to determine the functional state of the digestive system of the animal; - determine the quality of feed and its deviation; - to determine the mass fraction of nutrients of feed; - to prepare rations for animals of different species, age and sex; - to assess the state of food safety in the country; - to prevent illnesses of alimentary origin and to prevent them; - to present the results of their own theoretical and practical studies on animal feeding problems.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. Safety, mycology and toxicology of forms - a science about the quality of feed and their safety for animals 2. The quality of feed is the main object of the study of safety, mycology and toxicology of feed 3. Classical and alternative methods for assessing the quality and safety of feed 4. Ecology of feeding animals 5. Safety of feeding animals 6. Features of feeding of feed to different kinds of animals 7. Fundamentals of physiology of animal feeding 8. Qualitative composition of the diet for different species and groups of animals 9. Reducing the quality and nutritional value of feed products during storage and processing 10. Fundamentals of fodder preparation 11. Environmental factors that reduce the quality of feed 12. Diseases of the alimentary genes caused by poor quality food 13. Sanitary and epidemiological significance of feed quality

	14 Optimization of feeding animals of different species and groups. 15. New trends in animal feeding 16. Methods of studying the content of mycotoxins **Topics of practical classes** 1. Determination of feed safety in laboratory conditions. 2. Analysis of the dynamics of insect toxin content in various zones of Ukraine. 3. Assessment of safety of feed according to laboratory parameters 4. Study of the functional state of the digestive system of the animal for the influence of toxins 5. Determination of threshold concentrations of toxins 6. Determination of the mass fraction of nutrients of feed 7. Determination of the quality of feed by oganoleptic indicators 8. Preparation of rations for animals of all ages and sexes 9. Determination of the daily flow of energy with feed and daily energy expenditure of the organism 10. Methods of detecting dangerous feeds 11. Determination of hazardous substances in the composition of feed. 12. Detection of the contamination of feed by fungal microflora. 13. Ecological certification of feed.
Language of teaching	Ukrainian, English

Department of technology of feed, feed additives and feeding of animals

Name of the discipline	Technology of formula-feed production
Lecturer	Dyachenko Leonid Sydorovych doctor of agricultural sciences, Professor of department of technology of feed, feed additives and feeding of animals
Year of study, semester	5 course, masters, the 2nd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - the main international and domestic manufacturing techniques of compound feeds concerning their safety for livestock production; - structurally technological properties of components formula-feed raw materials, their nutritious power, prote§nova, amino-acid, lipidic, carbohydrate, vitamin and mineral value; - The existing standards and other normative documents on compound feeds of different types and their certification; - to what changes components of compound feeds are exposed during their technological processing; - ways bacterial obsemenennost of input products of compound feeds and finished goods and indicators of physical and chemical, microbiological and sanitary and hygienic assessment and their threshold limit values according to ND; - Main processing methods of production of compound feeds and feed additives, including: Cleaning, crushing, dosage and mixing of components, granulation of compound feeds, production technology of feed additives and premixes; - Main methods of laboratory researches of quality and technological properties of input products of compound feeds; - The basic domestic laws and normative documents on quality managements of compound feeds, feed additives and premixes. *Skills:* - to define quality formula-feed raw materials behind values and characteristics of quality indicators according to requirements of technology of preparation of compound feeds; - to develop and introduce recipes of preparation of compound feeds in production; - to develop parameters of technological processes, proceeding from specific conditions of production, and the system of estimation of their performance; - to enter into production new recipes of compound feeds with inclusion of new components for the purpose of increase in efficiency of the formula-feed industry and the field of livestock

	production; - to apply the main methods of laboratory researches of quality and technological properties of raw materials and finished goods; - to own the main technological methods of storage and control of quality formula-feed raw materials and finished goods.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Subjects of lectures** 1. A camp and the prospects of development of formula-feed production in Ukraine. 2. General characteristic of resource formula-feed base. 3. Technology to reception, placement and storage of raw materials. 4. Technology of purification of raw materials of organic and mineral impurity. 5. Technology of purification of raw materials of metalomagn_tny impurity. 6. Technology thermal and vologoteplovo ï processings of grain and other raw materials. 7. Technology of crushing of input products. 8. Technology of a dosage of components of compound feeds. 9. Technology of mixing of components. 10. Technology of preparation and introduction of liquid components to composition of fodder mixes and compound feeds. 11. Technology of input in compound feeds of fodder fats. 12. Technology introduction of a carbamide to compound feeds for ruminant. 13. Technology of granulation of loose compound feeds. 14. Production technology of a formula-feed krupka. 15. General technological process of production of compound feeds. 16. Production technology of proteinaceous and vitamin and mineral additives and premixes **Subjects of a practical training** 1. Classification of compound feeds and feed additives. 2. Analysis of nutritional value of components and development of recipes of compound feeds. 3. Structurally mechanical vlastivostivost_ raw materials for production of compound feeds 4. Preparation of grain components for production of compound feeds

Language of teaching	5. Calculations introduction of molasses, carbamide and fat to compound feeds 6. Drawing up recipes of the previous mixes for production of compound feeds 7. Developments of recipes of BVMD and premixes for their inclusion in compound feeds 8. Practical occupations an excursion on formula-feed plant JSC Mironovsky Plant on Production of Grain and Compound Fe The Ukrainian

Name of the discipline	**The newest methods of researches in feeding of animals**
Lecturer	Dyachenko Leonid Sydorovych doctor of agricultural sciences, Professor of department of technology of forages, feed additives and feeding of animals
Year of study, semester	5 course, masters, the 2nd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - modern techniques of carrying out experiences from feeding of animals how to generalize and analyze their results, to formulate the corresponding conclusions and to make out scientific work; - the main directions and prospects of researches from feeding of animals in Ukraine and abroad, defining scientific and technical progress in livestock production; - zone features of forage production and feeding of certain types and statevov_kovy groups of animals that by results of researches to formulate the corresponding conclusions and recommendations; - the main international and domestic normative documents concerning safety of fodder means; - qualitative structure and biological and physical and chemical properties of various groups of forages zastosovuvat them in pilot studies; - principles of scientific methodology: objectivity, determinism, development, historicism, theory combination to practice and also methods carrying out scientific work. - the main directions of use of natural forages and fodder means of synthetic, chemical and microbiological synthesis in feedings of different types and groups of animals. - main approaches to creation of methods of increase in efficiency of use of nutrients of separate forages and in general

	diets of animals; - identification methods nedobroyak_snost_ fodder products; - the basic domestic laws and normative documents concerning quality management and safety of fodder products that are applied in experiences on feedings of animals. *Skills:* - to plan, to organize and conduct scientifically economic researches on all species and statevov_kovy groups of animals; - to process primary materials of researches and to carry out generalizations and conclusions by results of researches; - to apply the main methods of laboratory researches of quality and nutritional value of forages; - to make reports, foformlyat the thesis, the scientific publication (article, theses, etc.); - to make out applications for an invention and to protect intellectual property; -. to define cost efficiency of results of researches from feeding of animals.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. The short history of development of researches from feeding of animals. 2. The directions of researches about the feedings of animals defining scientific and technical progress in livestock production. 3. Modern requirements to statement of experiences from feeding of animals. 4. Scientific justification of statement of experience and creation of a working hypothesis. 5. The organization and performance of work on statements of an experiment on feedings of animals. 6. Conducting balance animal experiments on studying of digestibility of forages. 7. Biometric processing, analysis and assessment of results of a research. 8. Economic assessment of results of a research. 9. Experiences on cattle. 10. Experiences on sheep and goats. 11. Experiences on pigs. 12. Experiences on a bird of different types. 13. Experiences on bees. 14. Production check of results of a research.

	15. Registrations of research work on results of researches from feeding of animals 16. Application for an invention and registration of the rights for intellectual property. **Topics of a practical training** 1. Formulation of a subject of researches from feeding of animals. Choice of a subject of a research on desire of the student. 2. Preparation of a general methodology for animal feeding studies. Definition of goals, tasks and methods, object and subject of research. 3. Scientific justification of statement of experience from feeding of page - of animals (at the choice of the student). Collecting material on a subject of researches. Creation of a working hypothesis and its protection 4. Development of the scheme and selection of animals for experiment on studying of digestibility by a method of replacement of forages. Methods of studying of digestibility of forages. Allocation of the periods in experience and establishments of their duration. 5. Development of the scheme and selection of animals for experiment on studying of digestibility by a method of inert substances. Methods of studying of digestibility of forages. Allocation of the periods in experience and establishments of their duration. 6. Development of methods of carrying out a balance experiment on ruminants. Development of the general scheme of experiments on studying of a metabolism in ruminants 7. Development of methods of carrying out a balance experiment on monogastrichny animals. Development of the general scheme of experiments on studying of a metabolism in monogastric animals 8. Development of methods of carrying out a balance experiment on a bird. Development of the general scheme of experiments on studying of a metabolism in a bird 9. Drawing up the scheme of experiment from feeding by a method of groups and selection of animals of cattle. Definition of the periods of experience and establishment of their duration. Selection of animals by a method of the Republic of South Africa of analogs and parallel groups of analogs. 10. Development of the scheme of feeding of experimental pigs depending on a research objective. Replacement of forages in diets by quantity dry substances, power and a protein of nutritiousness 11. Establishments of indicators for a research on sheep and goats and ways of their definition. Zootechnical indicators. Indicators of a metabolism and quality of products. Economic indicators of a research

	12. Drawing up the scheme of experiment from feeding of a bird by a method of groups and selection of a bird. Definition of the periods of experience and establishment of their duration. Selection of individuals by the method of pair-analogues and parallel analogue groups. 13. Preparation of the experimental scheme for feeding on bees. Selection of bee colonies. Determination of periods and indicators for research 14. Development of forms for the consumption of feed and productivity of experimental animals. The journal of accounting for prescribed feeds, eaten and selected feces. Performance Log. A statement on the conduct of zootechnical analysis of feed and feces 15. Preparation of a scientific report, final work and their protection. Study of the structure and content of the master's thesis. Participation in the defense of final works. 16. Preparation of a scientific publication based on research materials. Study of the structure of scientific publication. Preparation of a scientific publication for publication, defense dissertation.
Language of teaching	Ukrainian

Name of the discipline	**Normalized animal feeding systems**
Lecturer	Kuzmenko Oksana Anatoliivna candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	masters, the 2nd year, the 3rd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* – physiological features of modern breeds, types and crosses of animals; – features of digestion and metabolism of energy, nutrients, minerals and biologically active substances in animals; – technique of operation and improvement of systems of complete feeding of animals for maintenance of high genetic potential; – peculiarities of animal feeding depending on technological features of production of various types of livestock products; – methods of control of the full value of feeding farm animals; – features of experiments on feeding of farm animals.

	Skills: – to determine the need for animals in energy, nutrients, minerals and biologically active substances; – to design rations and feeding systems for cattle, sheep, pigs, horses; – to apply modern domestic and foreign feeding systems for animals and poultry for various livestock production technologies; – to organize preparation of feed for feeding and feeding animals using different technologies; – to control over the level and value of feeding animals; – to develop recipes of mixed fodders, premixes, fodder mixes for the organization of full feeding of animals; – to apply the achievements of domestic and foreign science and best practices for the intensification of animal feeding; – to organize experiments on animal nutrition; – to present the results of their own theoretical and practical research on systems of normalized feeding.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 15. Introduction to normalized animal feeding. Rational feeding of highly productive animals. 16. Normalized feeding of cattle and methods of its improvement. 17. Estimation of energy nutrition of feeds and rations in metabolic energy. 18. Modern approaches to the normalization of valuation protein animal nutrition. 19. Rationing of carbohydrates and fats in cattle feeding. The role of mineral nutrition for animals. Vitamins and their importance for the animal organism. 20. Modern feed materials for animal feeding. Conservation of feed with biologically active additives.ми. 21. Mixed fodder in animal feeding. Additives of different origin in animal feeding. Premixes in animal feeding. 22. Methods of research on metabolism and control of the full value of animal feeding. 23. Normalize feeding of cattle. Organization of modern normalize feeding of dairy cows.

	24. Modern systems of normalized feeding of pigs. Organization of feeding of sows and young pigs for growing for meat on the basis of modern standards. 25. Modern systems of normalized feeding of sheep. 26. Modern systems of normalized feeding of horses. 27. Modern systems of normalized feeding of poultry. Organization of normalized feeding of hens, ducks, geese, turkeys, etc. according to modern norms. 28. Modern rabbit feeding systems. Modern feeding systems for fur animals. **Topics of practical classes** 15. Modern systems of normalized feeding of animals. 16. Rational feeding of highly productive animals according to modern norms. 17. The notion of rationing of cow feeding in the advanced countries of the world. 18. The latest system of nutritional value assessment of feed by chemical composition and amount of digestible nutrients. 19. Estimation of energy nutrition of feed by modern systems. 20. Estimation of the energy nutrition of the feed by the net energy of lactation (NEL). 21. Modern methods of evaluation of protein, carbohydrate, lipid, mineral and vitamin nutrition of feed. 22. The content of dry matter and structural and non-structural carbohydrates in feeds. The content of protein fraction in feeds. Content of mineral nutrients and vitamins in feeds. 23. Modern systems of normalized feeding of cattle. 24. Modern systems of normalized feeding of pigs. 25. Modern systems of normalized feeding of sheep. 26. Modern systems of normalized feeding of horses. 27. Modern systems of normalized feeding of poultry. 28. Modern systems of normalized feeding of rabbits. Modern systems of normalized feeding of for fur animals.
Language of teaching	Ukrainian

Name of the discipline	Modeling of technological processes of animal feeding
Lecturer	Tytariova Olena Mykhailivna candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	masters, the 2nd year, the 3rd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - regularities of realization of biological peculiarities of animals, their potential productivity; - the specifics of the organism's needs in the mineral and nutrients in water, depending on the physiological state and the level of productivity; - types of feeding and levels of consumption of different feeds; - modern breeding programs and technologies for the production and processing of livestock products; - mathematical programming and optimization of production processes, bases of economics, zoohygiene with the basics of designing and building livestock facilities, mechanization of production processes; - mathematical principles and a sequence of development of models that reflect the characteristics and components of the animal feeding process. *Skills:* - to combine abstract thinking with analysis and synthesis of technological processes; - to combine information and communication technologies; - to introduce different levels of animal nutrition and control the quality of feed and food; - to combine measures for raising the level of animal productivity and quality of their products; - to design and simulate technological processes in animal feeding; - to organize business and financial activity of livestock production; - apply knowledge of management and legislative provision of livestock production; - to apply biological, physiological and biochemical peculiarities of animals and their products in the selection of production technologies and research activities; - to use knowledge of the main directions and perspective of the livestock sector development in Ukraine, understanding of the problems in the agrarian business enterprises and the ability to

	apply foreign experience of agricultural development.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1.Modeling, as a method of scientific knowledge and a tool for managing the technological process in feeding animals. 2. The main stages of simulation. Scheme. Research of the simulated system and problem statement. 3. Mathematical methods and models as a means of making effective decisions. 4. Principle of construction of mathematical model of ration optimization for different species of agricultural land. animals 5. Features of construction of a mathematical model for optimizing the composition of compound feed for animals. 6-7.Specifics of modeling of technological processes of cattle feeding. 8. Features of modeling of technological processes of feeding of pigs 9. Features of simulation of technological processes of sheep feeding. 10. Features of simulation of technological processes of horse feeding. 11. Features of simulation of technological processes of poultry feeding. 12. Features of simulation of technological processes of fish feeding. 13. Features of simulation of technological processes of fur animal feeding. 14. Use gadgets to quickly solve technological issues of animal feeding. **Topics of practical classes** 1-2. Familiarization with the method of solving optimization problems of linear programming in the environment of EXCEL. 3-4. Development of models for optimization of rations for different types of animals and their solution using programs on the PC on an example of the problem of optimizing rations for cows. 5-6.Development of models for optimizing the composition of recipes for mixed fodders for different types of animals and solving them using programs on the PC. 7.Development of optimization models for ration for cattle and their solution using programs on a PC. 8. Development of models of optimization of rations for pigs and

	their solution using programs on a PC. 9. Development of models for ration optimization for sheep and their solution using programs on the PC. 10. Development of models of optimization of rations for horses and their solution using programs on a PC. 11. Development of models of optimization of rations for poultry and solving them using programs on a PC. 12. Development of models of optimization of rations for fish and solving them using programs on a PC. 13. Development of models for ration optimization for fur animals and solving them using programs on a PC. 14. Use gadgets to quickly solve technological issues of animal feeding
Language of teaching	Ukrainian

Name of the discipline	**Safety, mycology and toxicology of feed**
Lecturer	Slomchynskyi Mykhailo Mykolayovych candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	masters, the 1st year, the 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - software and data processing methods for feeding animals, their health, feed composition; - directions and perspectives of development of the feed industry in Ukraine and abroad, peculiarities of feeding animals in different climatic zones; - basic English terminology in animal nutrition and environmental protection; - the main international and domestic normative documents concerning feed safety; - qualitative composition of different groups of feed; - what changes are the nutrients of feed during storage; - the main approaches to the development of new technologies for the production and storage of feed. *Skills:* - to apply the basic methods of laboratory research of quality and technological properties of feed; - to determine the functional state of the digestive system of the animal;

	- determine the quality of feed and its deviation; - to determine the mass fraction of nutrients of feed; - to prepare rations for animals of different species, age and sex; - to assess the state of food safety in the country; - to prevent illnesses of alimentary origin and to prevent them; - to present the results of their own theoretical and practical studies on animal feeding problems.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. Safety, mycology and toxicology of forms - a science about the quality of feed and their safety for animals 2. The quality of feed is the main object of the study of safety, mycology and toxicology of feed 3. Classical and alternative methods for assessing the quality and safety of feed 4. Ecology of feeding animals 5. Safety of feeding animals 6. Features of feeding of feed to different kinds of animals 7. Fundamentals of physiology of animal feeding 8. Qualitative composition of the diet for different species and groups of animals 9. Reducing the quality and nutritional value of feed products during storage and processing 10. Fundamentals of fodder preparation 11. Environmental factors that reduce the quality of feed 12. Diseases of the alimentary genes caused by poor quality food 13. Sanitary and epidemiological significance of feed quality 14 Optimization of feeding animals of different species and groups. 15. New trends in animal feeding 16. Methods of studying the content of mycotoxins **Topics of practical classes** 1. Determination of feed safety in laboratory conditions. 2. Analysis of the dynamics of insect toxin content in various zones of Ukraine. 3. Assessment of safety of feed according to laboratory parameters 4. Study of the functional state of the digestive system of the

	animal for the influence of toxins 5. Determination of threshold concentrations of toxins 6. Determination of the mass fraction of nutrients of feed 7. Determination of the quality of feed by oganoleptic indicators 8. Preparation of rations for animals of all ages and sexes 9. Determination of the daily flow of energy with feed and daily energy expenditure of the organism 10. Methods of detecting dangerous feeds 11. Determination of hazardous substances in the composition of feed. 12. Detection of the contamination of feed by fungal microflora. 13. Ecological certification of feed.
Language of teaching	Ukrainian, English

Summary of compulsory discipline

Name of the discipline	**Fundamentals of professional activity**
Lecturer	Bomko Vitalii Semenovych Doctor of agricultural sciences Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	bachelor, the 1st year, the 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - Knowledge and understanding of the subject area and understanding of the profession. - Ability to carry out self-regulation and conduct a healthy lifestyle, the ability to adapt and act in a new situation. - Ability to choose a communication strategy; ability to work in a team; interpersonal skills. - Ability to evaluate and ensure the quality of work performed; - The desire to save the environment. - Ability to search, process and analyze information from various sources. *Skills:* - Demonstrate knowledge and understanding of the subject area and understanding of the profession in order to train employees of the company. - Adhere to the principles of self-regulation and healthy lifestyle, demonstrate the ability to adapt and act in a new situation.

	- Follow the principles of professional communication; cooperate in a team. - Influence on compliance with environmental protection requirements. - Identify ways to search, process and summarize information.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	75 students
Topics of in-class activity	**Topics of lectures** - Purpose and tasks of the course "Fundamentals of professional activity". - History of the development of agrarian science. - Types of training at the university. - University education system. - Forms of study at the university. - The system of agricultural education in Ukraine. - Brief description of the Bila Tserkva NAU and its biology-technological faculty. - Structure and main directions of research in animal husbandry of Ukraine. - Rights and responsibilities of students. - Status and current trends in livestock development in Ukraine and in the world. - The basic requirements to the qualities and knowledge of the student. **Topics of practical classes** - Subject and objectives of the course "Fundamentals of professional activity". - Technologist on livestock production, its functional and official duties. - History of development of agrarian education. - The list of educational institutions of the IV level of accreditation, which trains personnel for work in animal husbandry. - History of the Faculty. The governing bodies of the faculty. - Organization of the educational process at the university. Training of specialists at different educational and qualification levels. - Types of training at the university - Rating system for monitoring and evaluating students'

	knowledge. Test control knowledge. Module protection. - Modern trends in poultry farming in Ukraine - Characteristics of the OCR their duties - Modern trends in cattle breeding in Ukraine. Test control of knowledge. Module protection. - Forms of study at the university. - Scientific research in livestock and scientific activities. - Higher agrarian education in Ukraine - The role of agriculture in society. - The problem of providing Ukrainian population with products of animal origin. - Outstanding Livestock Sciences. - Modern tendencies of pig breeding development in Ukraine - Technology of production and processing of livestock products (milk, beef). - Technology of production and processing of pig products (pork). - Technology of production and processing of poultry products (meat, eggs ...). - Library and bibliography. Test control knowledge. Module protection.
Language of teaching	Ukrainian, English

Name of the discipline	**Feeding farm animals**
Lecturer	Bomko Vitalii Doctor of Agricultural Sciences, Professor, Head of department of technology of forages, feed additives and feeding of animals
Year of study, semester	2 course, bachelors, the 3rd semester 3 course, bachelors, the 4th semester
Faculties where the students are offered to study the discipline	The biologist - technological faculty Ecological Faculty Faculty of Veterinary Medicine
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - nutrition biology of domestic animals of different species; - organization of scientifically substantiated feeding; - advanced methods of harvesting of forages; - recipes of mixed fodders intended for farm animals of different types, age and productivity. - quality properties and nutritional value of feed; - changes occurring during harvesting, storage of feed and

	preparation for feeding; - the basic methods of intensive growing of young animals and fattening; - peculiarities of nursing and pedigree feeding. - basic approaches to the calculation of rations of fodder mixes for different age groups of animals *Skills:* - calculate the need for animals in feed for the whole economy; - determine forage rules; - to form rations and determine their biological value and conduct their analyzes for animals of different sex-age groups; - to develop recipes of mixed fodders for animals of different sex-age groups depending on productivity; - to compile a matrix of optimization of rations for calculation on a computer; - to prepare mixtures of forages for silage; - determine the amount of additives in the silage raw material; - use machines and mechanisms for the preparation and distribution of feed; - to determine the chemical analysis of feed and to calculate their nutritional value; - to present the results of their own theoretical and practical studies on animal feeding problems.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures:** 1. Assessment of nutrition of feed and rations 2. Permeability of feed and rations 3. The metabolism and energy in the body of animals 4. Estimation of energy (total) nutrition of feed. 5. Protein nutrition of feed 6. Mineral nutrition of feed 7. Vitamin nutrition of feed 8. Fodder products 9. Technology of preparation and use of hay, herbal flour and cutting 10. Preparation and use of silage and haylage 11. Grain feed 12. Waste from crop production, industry and animal feed 13. Combined feeds, protein-vitamin-mineral supplements, premixes 14. Basics of normalized feeding. The need for animals in supportive, productive and reproductive fodder. The system of normalized feeding

	and its main elements 15. Feed rations and their structure for different species and age groups. Zotechnical requirements and preparation of raw data for the preparation of rations using a PC. 16. Feeding of dead cows, broods and bulls-breeders 17. Feeding dairy cows 18. Feeding young animals of bovine animals up to 6 months and repair young animals 19. Feeding the young cattle in the growing of meat and fattening of adult bovine animals 20. Biological and economic characteristics of pigs. 21. Feeding buds, single, pigs sows 22. Feeding subspecies sows 23. Feeding pigs-sysuns. Feeding piglets after weaning and repairing young animals 24. Feeding pigs and controlling the full value of pig feeding 25. Feeding sheep of various breeds, sex and age groups. Main feeds. Feeding the sheepplants 26. Feeding of the uterus in preparation for insemination, during the period of crutch and lactation 27. Feeding lambs in the subsistence period and after culling. Feeding the repair young. Feeding the hawks, fattening sheep. Features of feeding sheep with pasture and steady maintenance. Methods of controlling the full value of feeding sheep and goats 28. Feeding horses. Features of metabolism of horses during work. The need for working horses in nutrients, feeding horses. 29. Features of feeding stallions, pregnant and subspecies mare. Feeding the horses and raising young animals 30. Feeding of poultry. Features of feeding adult chickens, chickens. 31. Features of feeding turkeys and turkeys. Standards, feeds, rations. Feeding technology. Methods of controlling the full value of feeding birds 32. Feeding adult waterfowl. Standards, feeds, rations. Feeding technology. Feeding ducklings and caterpillars. Methods of control of the value and efficiency of feeding young birds. 33. Feeding rabbits. Nutrition, fur animals **Subjects of a practical training** 1. Definition in the feed of the primary, hygroscopic moisture, crude ash. 2. Definition in the feed of raw protein 3. Determination of raw fat 4. Determination of crude fiber 5. Determination of ash, calcium, phosphorus and the calculation of the content of non-free extraneous substances. 6. Determination of the chemical composition of feed, digestion of feed and rations. 7. Methods and techniques for determining the digestibility of feed 8. The balance of nitrogen and carbon. Balance method for determining material changes in an animal's organism 9. Determination of total nutrition of feed (energy) in oat feed units and ECO 10. Protein, vitamin, mineral nutrition of feed. The concept of a

	comprehensive assessment of nutrition of feed. 11. Calculations on mineral and feed additives. 12. The nutritional value of green fodder. Zootechnical and economic evaluation of green feed. 13. Nutritive value of hay, straw. Artificially dried herbal food. 14. Nutritive value of silage and haylage. 15. Nutritional value of cereal feeds, flourish feed. Machetes and worms. Animal feeds. Fodder 16. Feeding of dead cows 17. Feeding dairy cows 18. Feeding calves up to 6 months of age 19. Feeding repair heifers 20. Feeding of young cattle in cattle growing and fattening of adult bovine animals 21. Technique of feeding chickens-pedigrees. Methods of control of its full value. 22. Feeding single, sucking sows. Norms of rations, structure of rations, type and technique of feeding, methods of control of its full value. 23. Feeding subspaces of sows, piglets. Norms, rations, their structure, type and technique of feeding, methods of control of their full value 24. Feeding pigs. Standards, rations and feeds, structure of rations, type and technique of feeding, methods of control of its full value. 25. Feeding the sheep. Feeding of the uterus during preparation for insemination, during the period of crutch and lactation. Standards of feeding. 26. Feeding a repair young sheep. Feeding the hawks, fattening sheep. 27. Feeding horses. Norms of feeding, feed, feeding technology. 28. Feeding of the breeders of industrial and pedigree herds. 29. Feeding young birds. 30. Feeding chickens, chickens-broilers, ducklings, caterpillars. Methods of control of the value and efficiency of feeding young birds. 31. Feeding rabbits, honey (males, females, young animals). Standards, feeds, feeding techniques. 32. Feeding fur-bearing animals. Standards, feeds, feeding techniques 33. Nutrition of pond fish, norms, feeds, feeding techniques.
Language of teaching	Ukrainian, English

Name of the discipline	**Production, storage and quality control of feed and feed additives**
Lecturer	Cherniavskyi Oleksandr candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	2 course, bachelors, the 3rd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - advanced methods of harvesting high quality feed; - methods of zootechnical research of qualitative composition of feed and feed additives; - advanced technologies of storage of feed and feed additives; - methods of assessing the quality of feed; - properties and quality of feed; - changes occurring during harvesting, storage of feed and preparation for feeding; - classification of feeds. *Skills:* - to organize continuous monitoring of energy and protein nutrition of diets; - to carry out an organoleptic assessment of the quality of feed and feed additives; - to conduct a laboratory assessment of the quality of feed and feed additives; - prepare storage facilities for storage of feed; - to store food and feed supplements in a quality manner - determine the chemical composition of the feed and calculate its nutritional value.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	65 students
Topics of in-class activity	**Topic of lectures:** 1 History of science and general issues of storage and quality control of feed. Biological and ecological features of forage

	plants 2. Conveyor production of feed 3. Technologies of production and storage of root crops 4 Technologies of production and storage of bulbous plants 5. Technology of production and storage of corn silage 6. Technology of production and storage of grass silage 7. Technologies of production and storage of hay and herbal flour 8. Technologies of production and storage of pulp, flour milling, cereal and oilseed extractive industries 9. Technologies of production and storage of grain feed. Analysis of feed and evaluation of its chemical composition 10. Characteristics and classification of mixed fodders. Technology of production and storage of mixed fodders. 11. Technologies for the production and storage of animal feed 12. Classification of feed additives. 13. World trends in the application of feed microbiological synthesis 14. Technological lines in the general scheme of the technological process of production of mixed fodder **Topics of a practical training:** 1.Extraction of grass mixers 2. Development of agrotechnics for the cultivation of perennial grasses 3. Botanical and morphological characteristics of root crops. Farming machinery growing. 4. Botanical and morphological characteristics of potatoes. Farming machinery growing. 5. Assessment of feed quality. 6. Assessment of the quality of green fodder. 7. Evaluation of the quality of the corn silage. 8. Evaluation of the quality of the grass silage. 9. Assessment of hay quality. 10. Evaluation of straw quality. 11. Evaluation of the quality of root crops and melons. 12. Grain feed quality assessment. 13. Estimation of quality of remnants of oil extraction and waste flour mill production. 14. Evaluation of the quality of animal feed. 15. Evaluation of the quality of feed and feed additives. 16. Zotechnical analysis, as a method for assessing the chemical composition and quality of feed. Determination of initial water. Determination of the content of hygroscopic water. 17. Determination of the total amount of water. Definition of "crude" ash. 18. Definition of "raw" protein for Kjeldahl. 19. Determination of "raw" fat by Soxhlet. 20. Definition of "crude" cellulose by Henneberg and Storm

	(accelerated method). 21. Biologically active feed additives. 22. Energy feed additives. Protein feed additives 24. Technology of granulation of mixed fodders. Typical technological lines of mixed feed production.
Language of teaching	Ukrainian

Summary of compulsory discipline

Name of the discipline	**Fundamentals of professional activity**
Lecturer	Bomko Vitalii Semenovych Doctor of agricultural sciences Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	bachelor, the 1st year, the 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - Knowledge and understanding of the subject area and understanding of the profession. - Ability to carry out self-regulation and conduct a healthy lifestyle, the ability to adapt and act in a new situation. - Ability to choose a communication strategy; ability to work in a team; interpersonal skills. - Ability to evaluate and ensure the quality of work performed; - The desire to save the environment. - Ability to search, process and analyze information from various sources. *Skills:* - Demonstrate knowledge and understanding of the subject area and understanding of the profession in order to train employees of the company. - Adhere to the principles of self-regulation and healthy lifestyle, demonstrate the ability to adapt and act in a new situation. - Follow the principles of professional communication; cooperate in a team. - Influence on compliance with environmental protection requirements. - Identify ways to search, process and summarize information.
Discipline description	
Prerequisites needed for	

studing the discipline	No
Students' limit in a group	75 students
Topics of in-class activity	**Topics of lectures** - Purpose and tasks of the course "Fundamentals of professional activity". - History of the development of agrarian science. - Types of training at the university. - University education system. - Forms of study at the university. - The system of agricultural education in Ukraine. - Brief description of the Bila Tserkva NAU and its biology-technological faculty. - Structure and main directions of research in animal husbandry of Ukraine. - Rights and responsibilities of students. - Status and current trends in livestock development in Ukraine and in the world. - The basic requirements to the qualities and knowledge of the student. **Topics of practical classes** - Subject and objectives of the course "Fundamentals of professional activity". - Technologist on livestock production, its functional and official duties. - History of development of agrarian education. - The list of educational institutions of the IV level of accreditation, which trains personnel for work in animal husbandry. - History of the Faculty. The governing bodies of the faculty. - Organization of the educational process at the university. Training of specialists at different educational and qualification levels. - Types of training at the university - Rating system for monitoring and evaluating students' knowledge. Test control knowledge. Module protection. - Modern trends in poultry farming in Ukraine - Characteristics of the OCR their duties - Modern trends in cattle breeding in Ukraine. Test control of knowledge. Module protection. - Forms of study at the university. - Scientific research in livestock and scientific activities. - Higher agrarian education in Ukraine

	- The role of agriculture in society. - The problem of providing Ukrainian population with products of animal origin. - Outstanding Livestock Sciences. - Modern tendencies of pig breeding development in Ukraine - Technology of production and processing of livestock products (milk, beef). - Technology of production and processing of pig products (pork). - Technology of production and processing of poultry products (meat, eggs ...). - Library and bibliography. Test control knowledge. Module protection.
Language of teaching	Ukrainian, English

Name of the discipline	**Feeding farm animals**
Lecturer	Bomko Vitalii Doctor of Agricultural Sciences, Professor, Head of department of technology of forages, feed additives and feeding of animals
Year of study, semester	2 course, bachelors, the 3rd semester 3 course, bachelors, the 4th semester
Faculties where the students are offered to study the discipline	The biologist - technological faculty Ecological Faculty Faculty of Veterinary Medicine
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - nutrition biology of domestic animals of different species; - organization of scientifically substantiated feeding; - advanced methods of harvesting of forages; - recipes of mixed fodders intended for farm animals of different types, age and productivity. - quality properties and nutritional value of feed; - changes occurring during harvesting, storage of feed and preparation for feeding; - the basic methods of intensive growing of young animals and fattening; - peculiarities of nursing and pedigree feeding. - basic approaches to the calculation of rations of fodder mixes for different age groups of animals *Skills:* - calculate the need for animals in feed for the whole economy;

	- determine forage rules; - to form rations and determine their biological value and conduct their analyzes for animals of different sex-age groups; - to develop recipes of mixed fodders for animals of different sex-age groups depending on productivity; - to compile a matrix of optimization of rations for calculation on a computer; - to prepare mixtures of forages for silage; - determine the amount of additives in the silage raw material; - use machines and mechanisms for the preparation and distribution of feed; - to determine the chemical analysis of feed and to calculate their nutritional value; - to present the results of their own theoretical and practical studies on animal feeding problems.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures:** 1. Assessment of nutrition of feed and rations 2. Permeability of feed and rations 3. The metabolism and energy in the body of animals 4. Estimation of energy (total) nutrition of feed. 5. Protein nutrition of feed 6. Mineral nutrition of feed 7. Vitamin nutrition of feed 8. Fodder products 9. Technology of preparation and use of hay, herbal flour and cutting 10. Preparation and use of silage and haylage 11. Grain feed 12. Waste from crop production, industry and animal feed 13. Combined feeds, protein-vitamin-mineral supplements, premixes 14. Basics of normalized feeding. The need for animals in supportive, productive and reproductive fodder. The system of normalized feeding and its main elements 15. Feed rations and their structure for different species and age groups. Zotechnical requirements and preparation of raw data for the preparation of rations using a PC. 16. Feeding of dead cows, broods and bulls-breeders 17. Feeding dairy cows 18. Feeding young animals of bovine animals up to 6 months and repair young animals 19. Feeding the young cattle in the growing of meat and fattening of

	adult bovine animals 20. Biological and economic characteristics of pigs. 21. Feeding buds, single, pigs sows 22. Feeding subspecies sows 23. Feeding pigs-sysuns. Feeding piglets after weaning and repairing young animals 24. Feeding pigs and controlling the full value of pig feeding 25. Feeding sheep of various breeds, sex and age groups. Main feeds. Feeding the sheepplants 26. Feeding of the uterus in preparation for insemination, during the period of crutch and lactation 27. Feeding lambs in the subsistence period and after culling. Feeding the repair young. Feeding the hawks, fattening sheep. Features of feeding sheep with pasture and steady maintenance. Methods of controlling the full value of feeding sheep and goats 28. Feeding horses. Features of metabolism of horses during work. The need for working horses in nutrients, feeding horses. 29. Features of feeding stallions, pregnant and subspecies mare. Feeding the horses and raising young animals 30. Feeding of poultry. Features of feeding adult chickens, chickens. 31. Features of feeding turkeys and turkeys. Standards, feeds, rations. Feeding technology. Methods of controlling the full value of feeding birds 32. Feeding adult waterfowl. Standards, feeds, rations. Feeding technology. Feeding ducklings and caterpillars. Methods of control of the value and efficiency of feeding young birds. 33. Feeding rabbits. Nutrition, fur animals **Subjects of a practical training** 1. Definition in the feed of the primary, hygroscopic moisture, crude ash. 2. Definition in the feed of raw protein 3. Determination of raw fat 4. Determination of crude fiber 5. Determination of ash, calcium, phosphorus and the calculation of the content of non-free extraneous substances. 6. Determination of the chemical composition of feed, digestion of feed and rations. 7. Methods and techniques for determining the digestibility of feed 8. The balance of nitrogen and carbon. Balance method for determining material changes in an animal's organism 9. Determination of total nutrition of feed (energy) in oat feed units and ECO 10. Protein, vitamin, mineral nutrition of feed. The concept of a comprehensive assessment of nutrition of feed. 11. Calculations on mineral and feed additives. 12. The nutritional value of green fodder. Zootechnical and economic evaluation of green feed. 13. Nutritive value of hay, straw. Artificially dried herbal food. 14. Nutritive value of silage and haylage. 15. Nutritional value of cereal feeds, flourish feed. Machetes and worms. Animal feeds. Fodder 16. Feeding of dead cows

	17. Feeding dairy cows 18. Feeding calves up to 6 months of age 19. Feeding repair heifers 20. Feeding of young cattle in cattle growing and fattening of adult bovine animals 21. Technique of feeding chickens-pedigrees. Methods of control of its full value. 22. Feeding single, sucking sows. Norms of rations, structure of rations, type and technique of feeding, methods of control of its full value. 23. Feeding subspaces of sows, piglets. Norms, rations, their structure, type and technique of feeding, methods of control of their full value 24. Feeding pigs. Standards, rations and feeds, structure of rations, type and technique of feeding, methods of control of its full value. 25. Feeding the sheep. Feeding of the uterus during preparation for insemination, during the period of crutch and lactation. Standards of feeding. 26. Feeding a repair young sheep. Feeding the hawks, fattening sheep. 27. Feeding horses. Norms of feeding, feed, feeding technology. 28. Feeding of the breeders of industrial and pedigree herds. 29. Feeding young birds. 30. Feeding chickens, chickens-broilers, ducklings, caterpillars. Methods of control of the value and efficiency of feeding young birds. 31. Feeding rabbits, honey (males, females, young animals). Standards, feeds, feeding techniques. 32. Feeding fur-bearing animals. Standards, feeds, feeding techniques 33. Nutrition of pond fish, norms, feeds, feeding techniques.
Language of teaching	Ukrainian, English

Name of the discipline	**Production, storage and quality control of feed and feed additives**
Lecturer	Cherniavskyi Oleksandr candidate of agricultural sciences (PhD) Associate Professor of the Department of technology of feed, feed additives and feeding of animals
Year of study, semester	2 course, bachelors, the 3rd semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: *Knowledges:* - advanced methods of harvesting high quality feed; - methods of zootechnical research of qualitative composition of feed and feed additives; - advanced technologies of storage of feed and feed additives;

	- methods of assessing the quality of feed; - properties and quality of feed; - changes occurring during harvesting, storage of feed and preparation for feeding; - classification of feeds. *Skills:* - to organize continuous monitoring of energy and protein nutrition of diets; - to carry out an organoleptic assessment of the quality of feed and feed additives; - to conduct a laboratory assessment of the quality of feed and feed additives; - prepare storage facilities for storage of feed; - to store food and feed supplements in a quality manner - determine the chemical composition of the feed and calculate its nutritional value.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	65 students
Topics of in-class activity	**Topic of lectures:** 1 History of science and general issues of storage and quality control of feed. Biological and ecological features of forage plants 2. Conveyor production of feed 3. Technologies of production and storage of root crops 4 Technologies of production and storage of bulbous plants 5. Technology of production and storage of corn silage 6. Technology of production and storage of grass silage 7. Technologies of production and storage of hay and herbal flour 8. Technologies of production and storage of pulp, flour milling, cereal and oilseed extractive industries 9. Technologies of production and storage of grain feed. Analysis of feed and evaluation of its chemical composition 10. Characteristics and classification of mixed fodders. Technology of production and storage of mixed fodders. 11. Technologies for the production and storage of animal feed 12. Classification of feed additives. 13. World trends in the application of feed microbiological synthesis 14. Technological lines in the general scheme of the

	technological process of production of mixed fodder **Topics of a practical training:** 1.Extraction of grass mixers 2. Development of agrotechnics for the cultivation of perennial grasses 3. Botanical and morphological characteristics of root crops. Farming machinery growing. 4. Botanical and morphological characteristics of potatoes. Farming machinery growing. 5. Assessment of feed quality. 6. Assessment of the quality of green fodder. 7. Evaluation of the quality of the corn silage. 8. Evaluation of the quality of the grass silage. 9. Assessment of hay quality. 10. Evaluation of straw quality. 11. Evaluation of the quality of root crops and melons. 12. Grain feed quality assessment. 13. Estimation of quality of remnants of oil extraction and waste flour mill production. 14. Evaluation of the quality of animal feed. 15. Evaluation of the quality of feed and feed additives. 16. Zotechnical analysis, as a method for assessing the chemical composition and quality of feed. Determination of initial water. Determination of the content of hygroscopic water. 17. Determination of the total amount of water. Definition of "crude" ash. 18. Definition of "raw" protein for Kjeldahl. 19. Determination of "raw" fat by Soxhlet. 20. Definition of "crude" cellulose by Henneberg and Storm (accelerated method). 21. Biologically active feed additives. 22. Energy feed additives. Protein feed additives 24. Technology of granulation of mixed fodders. Typical technological lines of mixed feed production.
Language of teaching	Ukrainian

Name of the discipline	Chemistry
Lecturer	Ponomarenko Nataliia Viktorivna Candidate of Agricultural Sciences, Associate Professor, Department of Chemistry
Year of study, semester	1 course, 1 semester
Faculties where the students are offered to study the discipline	Faculty of Agro-Biotechnology
List of competencies and learning outcomes provided by the discipline	The result of the discipline is the acquisition by students of such knowledge and skills: **Know:** - Basic knowledge of chemistry. - Knowledge and understanding of basic biological and agrotechnological concepts, rules and theories related to the cultivation of agricultural and other plants. - Ability to apply knowledge and understanding of physiological processes of agricultural plants for solving production technological problems. - Skills in the assessment, interpretation and synthesis of theoretical information and practical, production and research data in the fields of agricultural production. - Ability to apply methods of statistical processing of research data related to technological and breeding processes in agronomy. - It is scientifically grounded to use fertilizers and plant protection products, taking into account their chemical and physical properties and their environmental impact. - Ability to solve a wide range of problems and tasks in the process of cultivating crops by understanding their biological features and using both theoretical and practical methods. **Be able to:** - Demonstrate knowledge and understanding of the fundamental sections of chemistry to the extent necessary for the possession of relevant knowledge in the field of agricultural production. - Ability to use statistical methods for processing data in agricultural production. - To possess, at the operational level, methods for observing, describing, identifying, classifying, and also cultivating objects and maintaining the stability of agrocenoses with the preservation of natural diversity. - Ability to design and organize the technologies of cultivating seed and planting material of agricultural crops in accordance with the

	established requirements in a qualified manner. - Ability to professionally design technologies for processing and primary processing of crop production, its storage. - Ability to coordinate, integrate and improve the organization of production processes in agricultural production.
Description of the discipline	
Prerequisites needed for studing the discipline	The program was prepared taking into account the structural and logical connection of the discipline of inorganic, analytical, organic chemistry, physiology, genetics and other disciplines**.**
Students' limit in a group	25 students
Topics of in-class activity	**Themes of lectures** 1. Basic concepts and laws of chemistry 2. Ecological, economic and social aspects of chemistry. History of the development of chemistry as a science. The place of chemistry in the sciences. Methodological approaches of chemistry 3. Methods of chemical analysis in biology, agriculture and agronomy 4. Classification of methods of analysis. Qualitative and quantitative analysis. Chemical, physical and physico-chemical methods of research 5. Chemical elements and their compounds in soils 6. The content of mineral and organic compounds in soils - Silicon, Aluminum, Ferum, Calcium, Magnesium, Potassium, Sodium, Mangan, Sulfur, Carbon, Nitrogen, Phosphorus 7. Water-physical properties of the soil 8. Water-retaining ability of soil, maximum hygroscopicity, humidity of fading, humidity of the gap of capillary bond, water lifting capacity and the ability of soil 9. Basic properties of different classes of inorganic compounds 10. Definition, structure, reception, physical and chemical properties of oxides, acids, bases and salts 11. Properties of soil colloids 12. Soil colloids of mineral and organic origin. Composition and origin of soil colloids, structure and properties of colloids, coagulation and peptization 13. Features of the chemical composition of soil solutions 14. Salt, cationic and anionic composition of soil solutions, mineral compounds Nitrogen, Sulfurous, Phosphorus, macro- and

	microelements, organic compounds 15. Environmental reaction. Acidity and alkalinity of soils 16. Environmental reaction, pH. Actual, potential, exchange, hydrolytic acidity and alkalinity of soils. The buffer capacity of soils and its significance 17. Structure and classification of organic compounds 18. The theory of the structure of organic compounds O.M. Butlerova Classification of organic compounds. Basic properties of hydrocarbons, alcohols and carboxylic acids 19. Fat Chemistry - Definition, Classification, Structure, Methods of Preparation, Physical and Chemical Properties, Application 20. Chemistry of carbohydrates - definition, classification, structure, methods of obtaining, physical and chemical properties, application 21. Chemistry of proteins - definition, classification, structure, methods of obtaining, physical and chemical properties, application 22. Chemistry of nucleic acids - definition, classification, structure, methods of obtaining, physical and chemical properties, application 23. Characteristics of biologically active substances and their use - definition, classification, structure, methods of obtaining, physical and chemical properties, application **Themes of practical classes** 1. Qualitative analysis of soil extraction for the presence of calcium, magnesium, chlorides, sulfates, ammonium and ferric ions 2. Quantitative determination of dry soil balance, carbonate and hydrocarbonic alkalinity, chloride-ion content by the Mora method, titration on methyl orange and phenolphthalein, complexometric determination of total water hardness 3. Physico-chemical methods of research with the use of photoelectrocolorimetry, spectrophotometry with bitwise calibration graphs and the quantitative determination of cuprous ions, protein content and ascorbic acid in plant extracts 4. Method of chromatographic analysis - study fractional composition of common lipids by thin-layer chromatography, quantitative determination of individual classes of lipids by spectrophotometric method using a calibration graph, chromatographic detection of ascorbic acid and carotenoids in plant extract 5. Properties of metallic elements and their compounds - qualitative determination of cations of calcium, magnesium, barium and ferrum 6. Properties of nonmetallic elements and their compounds - qualitative determination of nitrate ions, sulfate ions, hydrophosphate ions, investigation of properties of sulfate and nitric acids

Language of teaching	7. Determination of surface-active and surface-inactive substances, the surface tension has become a gmometric method, the detection of the dependence of the adsorption rate on the nature of the adsorbent and the elution, the determination of endo- and exo-osmosis 8. Properties of colloidal solutions - production of hydrosilicon sulfur, rosin, silver iodide, high molecular compounds, the phenomenon of Tindal 9. Experimental determination of pH of a solution, titrimetric method of determination of hydrolytic and exchange acidity of soil, preparation of buffer solutions 10. Reactions of oxidation of alcohols, qualitative reactions on alcohols and carboxylic acids, dissociation of acids, properties of unsaturated carboxylic acids 11. Emulsification and oxidation of unsaturated fats, preparation of liquid, solid and insoluble soaps. 12. Properties of carbohydrates - reaction of Trommer, Feling, "silver mirror", Selivanova, qualitative reaction on sucrose and starch 13. Reaction of amino acids to litmus, protein synthesis, biuret reaction, xanthropine reaction, Fole reaction, ninhydrin reaction 14. Qualitative analysis of chlorophosphos, determination in water of free residual dichloride by titration of methyl orange Ukrainian

Name of the discipline	**Biochemistry in animal husbandry**
Lecturer	Tsekhmistrenko Svitlana Ivanovna doctor of agricultural sciences, Professor of the Department of Chemistry
Year of study, semester	2 year, 1-2 semesters
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline List of competencies and learning outcomes provided by the discipline	The result of discipline learning is the acquisition of such knowledge and skills by students: ***To know:*** – solutions and their properties, buffer solutions, the concept of osmosis, diffusion, adsorption; – the structure, functions and metabolism of carbohydrates, lipids, proteins, nucleic acids, amino acids, amines, vitamins, hormones, enzymes in normal and with various metabolic disorders;

	– chemical composition of blood, milk, colostrum, eggs, wool, urine, liver, heart, spleen, kidneys, muscle and nervous tissues of farm animals; – exchange of proteins, lipids, carbohydrates, nucleic acids, vitamins, enzymes, hormones, water and minerals in the organism of farm animals and poultry; – to understand the relationship between different types of exchange; – to consider an organism as an open self–regulated system; – specificity of metabolism of substances in different organs, tissues and cells. ***To be able:*** - to prepare labdishes for biochemical research, - to select biological samples; - to preserve and process biological samples by appropriate methods for conducting biochemical analyzes; - prepare buffer solutions for research in vitro; - to prepare percent, normal, molar solutions; - to determine osmotic pressure; - to determine the active acidity of the medium; - to prepare colloidal solutions; - to use devices and laboratory equipment when studying the chemical composition of a living organism and indicators characterizing metabolic processes; - to determine the concentration of glucose and various metabolic metabolites of carbohydrates in biological substrates; - to determine lipid metabolism indices in biological substrates; - to determine the concentration of protein and metabolites of protein metabolism in biological substrates; - to investigate the indices of exchange of nucleic acids; - to determine the content of vitamins in biological material; - to determine the activity of enzymes in biological material; - to determine the content of macro- and micronutrients; - to analyze the hormonal state of the organism of animals and poultry; - to interpret the results obtained; determine the state of a living organism when changing biochemical parameters; - to control the clinical condition of animals; - to use aimed regulating of exchange processes aimed at increasing the productivity of farm animals and improving the quality of products.

Description of the discipline	
Prerequisites needed for studing the discipline	The program is prepared taking into account the structural and logical connection of discipline with inorganic, analytical, organic chemistry, physiology, genetics, breeding, feeding and other disciplines.
Students' limit in a group	25 students
Topics of in-class activity	**Themes of lectures** 1. Surface tension. Adsorption. Catalysis 2. Solutions. Osmosis and methods of determining osmotic pressure 3. pH and pH determination methods 4. Buffer solutions 5. Colloidal solutions and methods of their obtaining and properties. Gels 6. Biochemistry of carbohydrates 7. Biochemistry of lipids 8. Biochemistry of nucleic acids 9. Biochemistry of proteins 10. Mineral exchange. Water exchange 11. Vitamins 12. Enzymes 13. Hormones 14. Biological oxidation 15. Biochemistry of nervous tissue 16. Biochemistry of muscular and connective tissue 17. Biochemistry of blood 18. Biochemistry of bone tissue 19. Biochemistry of the liver 20. Biochemistry of the kidneys and urine 21. Biochemistry of meat 22. Biochemistry of the mammary gland and milk 23. Biochemistry of a bird's egg 24. Biochemistry of skin and wool 25. Biochemistry of honey and beekeeping products **Themes of practical classes** 1. Surface tension and methods for its determination. Adsorption. 2. Catalysis. 3. Osmosis and methods of determining osmotic pressure. 4. pH and pH determination methods.

	5. Colloidal solutions and methods of their obtaining. 6. Properties of colloidal solutions. Gels 7. Gels. 8. Biochemistry of carbohydrates. 9. Biochemistry of lipids. 10. Biochemistry of nucleic acids. 11. Biochemistry of proteins. 12. Mineral exchange. 13. Water exchange. 14. Vitamins. 15. Enzymes. 16. Hormones 17. Biochemistry of nervous tissue. 18. Biochemistry of muscular and connective tissue. 19. Biochemistry of blood. 20. Biochemistry of bone tissue .. 21. Biochemistry of the kidneys and urine. 22. Biochemistry of meat. 23. Biochemistry of milk. 24. Biochemistry of eggs. **25.** Biochemistry of skin and wool.
Language of teaching	Ukrainian

Name of the discipline	**Chemistry**
Lecturer	Tsekhimstrenko Oksana Sergiyivna Candidate of Agricultural Sciences, Associate Professor, Department of Chemistry
Year of study, semester	1 year, 1–2 semesters
Faculties where the students are offered to study the discipline	Faculty of Veterinary Medicine
List of competencies and learning outcomes provided by the discipline	The result of discipline learning is the acquisition of such knowledge and skills by students: ***To know:*** – modern methods of physico–chemical analysis; – to interpret the general laws that underlie the use of inorganic

	substances in pharmacy and medicine; – solutions and their properties, buffer solutions, the concept of osmosis, diffusion, adsorption; – the structure, functions and metabolism of carbohydrates, lipids, proteins, nucleic acids, amino acids, amines, vitamins, hormones, enzymes in normal and with various metabolic disorders; – chemical composition of blood, milk, colostrum, eggs, wool, urine, liver, heart, spleen, kidneys, muscle and nervous tissues of farm animals; – exchange of proteins, lipids, carbohydrates, nucleic acids, vitamins, enzymes, hormones, water and minerals in the organism of farm animals and poultry; – to understand the relationship between different types of exchange; – to consider an organism as an open self–regulated system; – specificity of metabolism of substances in different organs, tissues and cells. ***To be able:*** – to prepare labdishes for biochemical research, – to select biological samples; – to preserve and process biological samples by appropriate methods for conducting biochemical analyzes; – to prepare artificial solutions of carbohydrates, macro– and microelements, vitamins, proteins, amino acids and other substances; to determine the sorption properties of different surface–active substances; – prepare buffer solutions for research in vitro; – to prepare percent, normal, molar solutions; – to determine osmotic pressure; – to determine the active acidity of the medium; – to prepare colloidal solutions; – to use devices and laboratory equipment when studying the chemical composition of a living organism and indicators characterizing metabolic processes; – to determine the concentration of glucose and various metabolic metabolites of carbohydrates in biological substrates; – to determine lipid metabolism indices in biological substrates; – to determine the concentration of protein and metabolites of protein metabolism in biological substrates; – to investigate the indices of exchange of nucleic acids; – to determine the content of vitamins in biological material; – to determine the activity of enzymes in biological material;

	– to determine the content of macro– and micronutrients; – to analyze the hormonal state of the organism of animals and poultry; – to interpret the results obtained; determine the state of a living organism when changing biochemical parameters; – to control the clinical condition of animals; – to use aimed regulating of exchange processes aimed at increasing the productivity of farm animals and improving the quality of products; – to determine the biochemical parameters of honey, wax, pollen, royal jelly, propolis and make conclusions about the quality of beekeeping products.
Description of the discipline	
Prerequisites needed for studing the discipline	The program is prepared taking into account the structural and logical connection of discipline with general scientific disciplines and knowledge gained during the study of chemistry in secondary schools. As a result of the study of chemistry, the student knows the chemical composition of living organisms and the laws of chemical processes that underlie the existence of living matter. Chemistry is the theoretical basis for the study of physiology of agricultural sciences. animals, clinical biochemistry, pharmacology, genetics, microbiology, virology, toxicology, feeding, clinical diagnosis, therapy and other disciplines of the veterinary profile.
Students' limit in a group	100 students
Topics of in-class activity	**Themes of lectures** 1. Modern physico-chemical methods of research 2. Coordination compounds. 3. Chemistry of biogenic metals. 4. Structure, chemical properties and application of carboxylic acids 5. Structure, chemical properties and application of carbohydrates 6. Structure, chemical properties and application of lipids 7. Structure, chemical properties and application of nitrogen-containing compounds, aminoacides, proteins 8. Chemistry and metabolism of carbohydrates 9. Chemistry and lipid metabolism 10. Chemistry and protein exchange 11. Chemistry and exchange of nucleic acids

	12. Water and mineral exchange. 13. Water-soluble and fat-soluble vitamins. 14. Enzymes. Biological oxidation. Oxidative phosphorylation. 15. Hormones **Themes of practical classes** 1. Equipment and operating rules in the chemical laboratory. Modern physico-chemical methods of research. Titration. 2. Kinetics of chemical reactions (Dependence of the reaction rate on the concentration of reactants, Dependences of the rate of chemical reaction on temperature, Chemical equilibrium). 3. General characteristics of solutions. Solutions of non-electrolytes and electrolytes (Preparation of solutions with a given mass fraction, Preparation of a solution with a given mass fraction by mixing two solutions). 4. Coordination compounds (Preparation of coordination compounds, displacement of equilibrium of complex formation, primary and secondary dissociation of coordination compounds). 5. Redox reactions 6. S-ELEMENTS (Calcium, Sodium, Magnesium) 7. P-elements (Va, VIA-groups, Nitrogens, Phosphorus, Oxygen, Sulfur) 8. P-elements (VIIa-group, Chlorine, Iodine) 9. D-elements (Cooper, Zinc, Mangan, Chromium, Ferum). Qualitative analysis. 10. Saturated hydrocarbons 11. Unsaturated hydrocarbons 12. Alcohols, phenols, aldehydes, ketones 13. Saturated and unsaturated fatty acids 14. Phenol- and hydroxy acids 15. Ethers, esters, fats 16. Monosaccharides 17. Oligosaccharides, polysaccharides 18. Amines and amides 19. Amino acids, proteins 20. Heterocyclic compounds 21. Nucleic acids, alkaloids 22. Surface tension and methods for its determination. Adsorption. Catalysis. 23. Osmosis and methods of determining osmotic pressure. 24. pH and pH determination methods. Buffer solutions. 25. Colloidal solutions and methods of their obtaining.

	26. Properties of colloidal solutions. Gels 27. Biochemistry of carbohydrates. 28. Biochemistry of lipids. 29. Biochemistry of nucleic acids. 30. Biochemistry of proteins. 31. Water and mineral exchange. 32. Vitamins. 33. Enzymes. 34. Hormones 35. Biochemistry of nervous tissue. 36. Biochemistry of muscular and connective tissue. 37. Biochemistry of blood. Biochemistry of bone tissue 38. Biochemistry of the kidneys and urine. Biochemistry of meat. 39. Biochemistry of milk and mammalia glandule. 40. Biochemistry of eggs. Biochemistry of skin and wool.
Language of teaching	Ukrainian

Name of the discipline	**Biochemistry of meat and milk**
Lecturer	Polishchuk Svitlana Anatoliivna Candidate of Agricultural Sciences, Department of Chemistry
Year of study, semester	3 course, 6 semester
Faculties where the students are offered to study the discipline	Faculty of Biology and Technology (food technology)
List of competencies and learning outcomes provided by the discipline	The result of the discipline is the acquisition by students of such knowledge and skills: *Knowledge:* - chemical composition of milk and meat; - the nutritional and biological value of milk and dairy products, meat and meat products; - chemical composition and biological value of by-products (liver, kidneys, lungs); - biochemical basis for the production of biologically active preparations of animal origin for medicine, food industry; - biochemical processes occurring during the production and storage of dairy and meat products;

	- The mechanism and causes of molecular damage that lead to a decrease in product quality due to the detoxification of xenobiotics. *Skill* - use instruments and laboratory equipment in the study of the chemical composition of a living organism and indicators characterizing metabolic processes; - give an interpretation of the results; determine the state of a living organism when changing biochemical parameters; - monitor the clinical condition of animals; - aims to regulate the exchange processes aimed at improving the productivity of farm animals and improving product quality.
Description of the discipline	
Prerequisites needed for studing the discipline	The program was prepared taking into account the structural and logical connection of the discipline of inorganic, analytical, organic chemistry, physiology, genetics, breeding, feeding and other disciplines**.**
Students' limit in a group	25 students
Topics of in-class activity	**Themes of lectures** 1. The chemical composition of milk. 2. Biochemistry of lactation. 3. Physico-chemical and organoleptic properties of milk. 4. Factors affecting the composition and properties of milk. 5. Biochemical and physico-chemical processes in the production fermented milk products. 6. Biochemical and physico-chemical processes in the production cheese 7. Physical and chemical processes in the production of oil and canned milk. 8. The chemical composition of meat and offal. The basics obtain biologically active drugs. 9. Biochemistry of internal organs, their biological value. Obtaining biologically active drugs. 10. Factors affecting the quality of meat. 11. Biochemical processes in meat after slaughter of animals. 12. Changes in the biochemical properties of meat when exposed to physico-chemical factors. 13. Changes in the biochemical properties of meat when exposed to physico-chemical factors.

	14. The influence of the ecological state of the environment on the quality of meat products. **Themes of practical classes** 1. The study of the chemical composition of milk. 2. Determination of the content of vitamins and antibiotics in milk. 3. Methods of controlling the pasteurization of milk. 4. Determination of nitrates and nitrites in milk. 5. Research of fermented milk products. 6. Identification of deficiencies in milk. Chemical methods of milk quality control. 7. The study of fermented milk products and oils. The study of hard cheeses. 8. Non-protein extractives of meat. 9. The study of animal fats. 10. Functional biochemistry of muscle tissue. Determination of high-energy compounds in meat. 11. Biochemistry of meat ripening. 12. Chemical reactions to the freshness of meat. 13. Chemical methods for evaluating meat products.
Language of teaching	Ukrainian

Name of the discipline	**Physiology and Biochemistry of Hydrobionts**
Lecturer	Polishchuk Svitlana Anatoliivna Candidate of Agricultural Sciences, Department of Chemistry
Year of study, semester	2 course, 1-2 semester
Faculties where the students are offered to study the discipline	Ecological Faculty (aquatic bioresources)
List of competencies and learning outcomes provided by the discipline	The result of the discipline is the acquisition by students of such knowledge and skills: Know:

	- solutions and their properties, buffer solutions, the concept - osmosis, diffusion, adsorption; - structure, function and metabolism of carbohydrates, lipids, proteins, nucleic acids, amino acids, amines, vitamins, hormones, enzymes in normal conditions and in various metabolic disorders; - The chemical composition of sperm, fish eggs, blood, urine, liver, heart, muscle tissue of aquatic animals; - metabolism of proteins, lipids, carbohydrates, nucleic acids, vitamins, enzymes, hormones, water and minerals in the body of aquatic organisms; - understand the relationship between different types of exchange; - consider the body as an open self-regulating system; - specificity of the metabolism of substances in various organs, tissues and cells in different periods: feeding, spawning of freshwater and marine fish. Be able to: - prepare dishes for biochemical research, - select biological samples, - preserve and process biological samples according to the appropriate methods for carrying out biochemical analyzes - prepare buffer solutions for in vitro studies; - prepare percentage, normal, molar solutions; - determine the osmotic pressure; - determine the active acidity of the medium; - prepare colloidal solutions; - use instruments and laboratory equipment in the study of the chemical composition of a living organism and indicators characterizing metabolic processes; - to determine the concentration of glucose and various metabolites of carbohydrate metabolism in biological substrates; - Determine lipid metabolism in biological substrates; - determine the concentration of protein and metabolites of protein metabolism in biological substrates; - explore the indicators of exchange of nucleic acids; - determine the content of vitamins in biological material; - determine the activity of enzymes in biological material; - determine the content of macro-and micronutrients; - analyze the hormonal state of the body of aquatic organisms; - give an interpretation of the results; determine the state of a living organism when changing biochemical parameters; - monitor the status of aquatic animals;

	- aims to regulate the exchange processes aimed at improving the performance of fish farming and improving the quality of their products.
Description of the discipline	
Prerequisites needed for studing the discipline	The program is prepared taking into account the structural-logical connection discipline with organic chemistry, physiology of fish, genetics, breeding, feeding and keeping fish and other disciplines.
Students' limit in a group	25 students
Topics of in-class activity	**Themes of lectures** Topic 1. Surface tension. Adsorption, catalysis, osmosis. General characteristics of solutions. Topic 2. Water and its properties in the body of hydrobionts. Buffer systems of water. The pH of water and its value for the body of hydrobionts. Topic 3. Colloidal solutions methods of preparation and their properties. Topic 4. Carbohydrates. Topic 5. Lipids. Topic 6. Amino acids and proteins. Topic 7. Biochemistry and carbohydrate metabolism. Topic 8. Biochemistry and lipid metabolism. Topic 9. Biochemistry and protein metabolism. Topic 10. Micro- and macro-elements of their function and effect on the body of fish. Topic 11. Vitamins. Topic 12. Enzymes and their exchange in the body of hydrobionts. Topic 13. Endocrine system of hydrobionts. Theme 14. Basics of special biochemistry (liver, caviar, milk). **Themes of practical classes** Topic 1. Surface tension. Adsorption, catalysis, osmosis. General characteristics of solutions. Topic 2. Water and its properties in the body of hydrobionts. Buffer systems of water. The pH of water and its value for the body of hydrobionts. Topic 3. Colloidal solutions methods of preparation and their

	properties. Topic 4. Carbohydrates. Topic 5. Lipids. Topic 6. Amino acids and proteins. Topic 7. Biochemistry and carbohydrate metabolism. Topic 8. Biochemistry and lipid metabolism. Topic 9. Biochemistry and protein metabolism. Topic 10. Micro- and macro-elements of their function and effect on the body of fish. Topic 11. Vitamins. Topic 12. Enzymes and their exchange in the body of hydrobionts. Topic 13. Endocrine system of hydrobionts. Topic 14. Basics of special biochemistry (liver, caviar, milk).
Language of teaching	Ukrainian

Department of technology in poultry and pig breeding

Abstract of the discipline

Name of the discipline	**Aquaculture species production technologies**
Lecturer	Sobolev Oleksander Ivanovych Doctor of agricultural sciences, Professor of the Department of technology in poultry and pig breeding
Year of study, semester	3th year, 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study the discipline is the acquisition of such knowledge and skills by students: *Knowledge* – biological features of aquaculture species, the influence of environmental conditions on the life of hydrobionts; - types, systems, forms of fish farming, the production structure of fish farms, arrangement of fish ponds; – production processes in warm and cold-water pond fish farm; – natural food reserve and natural capacity of pond; – the basis of technology of reproduction of valuable aquaculture objects in natural (carp, herbivorous fish) and factory conditions; – methods of increasing the biological productivity and fish productivity of fisheries waters; – technologies of cultivation fish seed and commercial fish of various forms and cycles of fish farming in pond fish farms of different aquaculture zones; – features of the organization of production processes in the combined forms of fisheries; – methods and requirements for the transportation of fish seed and commercial fish. *Skills* – to determine the types of farms, to select the objects of cultivation, depending on the conditions of management; – to lead in fish farms operation of the main technological processes are associated with the cultivation of producers of cultivated species of fish draws their offspring (in pond and factory), the growth of young fishes to viable stages, cultivation of planting stock and marketable fish, depending on the system, the forms and the cycle of fisheries management; – to use the latest, fish-biological standards in the technological

	process of fish farming; – to calculate the fish-holding density and carry out stocking of fish; – to assess the quality of water which entering to the ponds of warm and cold water farms; – to carry out technical, chemical and biological amelioration of fish ponds; – to introduce ecologically safe approaches in fish farming and resource-saving technologies.
Description of the discipline	
Prerequisites needed for studing the discipline	Not
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lecture** 1. Classification and species diversity of pond fish. Biological features of pond fish. 2. Organization of pond fisheries. 3. Technology of reproduction the main objects of pond fish farming. 4. The technology of growing young fish. 5. The technology of growing fish seed. 6. The technology of wintering fish. 7. The technology of cultivation of marketable fish on a two-year cycle. **Topics of seminar** 1. The external structure of the body and shape of fish. The performance of the fish. 2. The calculation of the number of ponds of different categories and their areas. 3. Fish products and fish capacity of ponds. 4. The calculation density of planting of carp for fattening up and nursery ponds. 5. The calculation of the need of fish farming in a planting stock in a mixed stocking, rearing additional fish and polycultures. 6. Liming of fish ponds. The calculation of the required amount of mineral amendment and the order of their application. 7. The preparation of feed mixtures for fish. Calculation of the required amount of feed for carp farms.
Language of teaching	Ukrainian

Name of the discipline	**Innovative technologies of pig production and poultry production**
Lecturer	Fesenko Vasily Fedorovich Candidate of Agricultural Sciences, Associate Professor of the Department of Poultry Production and Pig Production Technology
Year of study, semester	5 year, 2 semesters
Faculties where the students are offered to study the discipline	Biological-technological faculty
List of competencies and learning outcomes provided by the discipline	The result of learning discipline is the acquisition of such knowledge and skills by students: *Knowledge:* 1. Know the biological features of pigs and poultry. 2. Know the technology of their containment, feeding and exploitation.. 3. Know the basic English terminology in pig breeding and poultry farming. 4. To know the main international and domestic normative documents concerning technological requirements of production. 5. Know the methods of assessing pigs and poultry. Know the features of breeding work. 6. Know the basics of industry development planning. Know the basic approaches to providing the necessary resources (feed, water, microclimate parameters). 7. Know and be able to calculate the basic technological parameters of the work of pig and poultry complexes. To know the basic approaches to the definition of needs in industrial premises. 8. Know the methods of calculating the need for feed. Be able to determine the need for sown areas under feed crops. To be able to make perspective light modes, to carry out an artificial moult of a bird and its estimation.. 9. Вміти оцінювати продуктивні якості свиней та птиці. 10. Own the main methods of categorizing fattening pigs and poultry, yielding slaughter products, assessing slaughter quality. *Skill:* - to introduce effective methods of innovative technologies of resource and energy saving; To introduce innovative methods for determining the productive qualities of hams, sows, young animals for picking and fattening, all kinds of poultry; - to determine the absolute and relative increment of pigs and poultry;

	- to select the best pigs by the method of control growth and control fattening; - to make rations and recipes of mixed fodder for all age groups of swine and poultry; - evaluate pigs by results of bonus; - to prevent the spread of infectious diseases of pigs and poultry; - Present the results of their own theoretical and practical research on the problems of pig and poultry farming.
Description of the discipline	
Prerequisites needed for studing the discipline	None
Students' limit in a group	25 студентів
Topics of in-class activity	**Themes of lectures** 1.Technology as a science of livestock production and its general provisions 2. Modern terminology of pig production and poultry production technologies and basic criteria for their determination 3. The main directions of implementation of resource saving technologies and reduction of production costs of pig production and poultry farming. 4. Biological features and genetic potential of pigs and poultry 5.Raw materials of the pig breeding and poultry industry 6.The material basis of heredity and the influence of genetic factors on the productivity of pigs and poultry 7. Ways to reduce electricity consumption and other electronics in pig and poultry farming 8. Proficiency-therapeutic factor of resource conservation 9. Economic efficiency of fattening of young animals of pigs and poultry to different live weight 10. Technology of transportation of pigs and poultry and primary processing of pig and poultry production **Themes of practical classes** 1.Calculation of the main technological parameters of the operation of the pig complex with the complete turnover of the herd according to the existing technology 2.Calculation of the main technological parameters of the operation of the pig complex with the complete turnover of the herd for the introduction of innovative technology 3. Promising Light Modes for Holders 4. Artificial raining of the bird and its evaluation
Language of teaching	Ukrainian, English

Name of the discipline	**Biology of poultry**
Lecturer	Bilkevych Vita Candidate of Agricultural Sciences Associate Professor of the Department of Poultry Production and Pig Production Technology
Year of study, semester	5 year, 2 semesters
Faculties where the students are offered to study the discipline	Departments whose students are invited to study discipline
List of competencies and learning outcomes provided by the discipline	The result of learning discipline is the acquisition of such knowledge and skills by students: **Knowledge** - features and differences in the structure of the body of farm birds and mammals; - features and differences in the structure and functions of respiratory and digestive organs in poultry and mammals; - features of the structure and physiological functions of the genital organs of females and male birds; - features of the circulatory and lymphatic system of poultry; - features of organs of internal secretion of bird; - peculiarities of maintaining the bird of the parent stock to produce eggs with high incubation qualities - features of the process of fertilization and embryonic development of embryos of various kinds of poultry; - the essence of the phenomenon of autosectiveness in the reproduction of birds; - the use of conditional and unconditional sexual reflexes in obtaining semen from males of farm birds; - Dependence of the indicators of sperm and its fertility on the modes of sexual intercourse of males of various types of poultry; - the role of each of the six oviduct units in the processes of fertilization and early development. **Skill** - to determine the age of development of embryos, depending on the days of incubation of eggs for different types of poultry; - to determine the sex of a day-old youngster in autossex crosses of poultry; - determine the sex of a day-old youngster at the rate of growth of lepidopterans in poultry;

	- to evaluate the semen and its fertility characteristics from the method of obtaining semen and the modes of its receipt from males of various types of poultry; - to carry out artificial insemination of females of different types of poultry in a new way and to evaluate the results obtained on the incubation qualities of eggs.
Description of the discipline	
Prerequisites needed for studing the discipline	None
Students' limit in a group	25 students
Topics of in-class activity	**Themes of lectures** 1. Biological features of various types of poultry. 2. Features of the structure of the axial skeleton. 3. Biological features of the skeleton of the free thoracic limb. 4. Biological features of the skeleton of the free pelvic limb. 5. Biological features of the muscular system of poultry. 6. Biological features of the respiratory apparatus of the bird 7. Biological features of poultry digestion. 8. Biological features of urination in poultry. 9. Features of the circulatory and lymphatic system of poultry. 10. Features of organs of internal secretion in poultry. 11. Biological features of the structure and physiological functions of genital organs of females of poultry. 12. Biological features of the structure and physiological functions of one hundred systems of male bird species. 13. The value of unconditional sexual reflexes of male farm birds. 14. Sexual use patterns of males and their effects on sperm and fertility of sperm. 15. Anatomical structure and physiological functions of different branches of the ovipositor of farm birds. 16. Technique and technology of new and existing methods of artificial insemination of farm birds. **Themes of practical classes** 1. Bodies of sense. Body of sight-the peculiarities of the structure of the eyeball. Hearing organ-structure of the inner ear. 2. Biological feature of reproduction of bird. Populations and fecundity of the bird. 3. Features of development of a bird's bud. 4. Egg production of poultry.

Language of teaching	5. Equipment and technology for determining the quantitative and qualitative parameters of semen of farm birds. 6. The age of the onset of puberty and the conditions for the productive use of males and females for different types of poultry. **Ukrainian**

Name of the discipline	Laboratory workshop on animal husbandry
Lecturer	Bilkevych Vita Candidate of Agricultural Sciences Associate Professor of the Department of Poultry Production and Pig Production Technology
Year of study, semester	5 year, 2 semesters
Faculties where the students are offered to study the discipline	Departments whose students are invited to study discipline
List of competencies and learning outcomes provided by the discipline	The result of learning discipline is the acquisition of such knowledge and skills by students: **Knowledge** - methods of conducting scientific and economic experiments on cattle; - methods of conducting scientific and economic experiments on pigs; - methods of conducting scientific and economic experiments on horseback; - methods of conducting scientific and economic experiments on sheep; - methods of carrying out scientific-economic experiments on poultry; **Skill** - to organize scientific and economic research; - to form groups of animals for research; - to process digital material using the methods of variation statistics; - to determine the economic efficiency of research results; - preparation and registration of the course (master's work);

	- Fundamentals of patenting and protection of inventions and discoveries. –
Description of the discipline	
Prerequisites needed for studing the discipline	None
Students' limit in a group	25 students
Topics of in-class activity	Themes of lectures 1. Laboratory workshop in livestock and science at the present stage of development of society. 2. Biological research methods. 3. Ideological and theoretical development and planning of scientific research. 4. Methodology of preparation and registration of master's work. 5. Techniques and schemes of conducting experiments on various types of agricultural land. animals 6. Basis of variation statistics. 7. Bases of Patenting and Protection of Inventions and Discoveries. Themes of practical classes 1. Features of conducting scientific and economic experiments on young pigs. Features of conducting scientific and economic experiments on adult pigs (sows). 2. Features of conducting scientific and economic experiments on cows. Features of conducting scientific and economic experiments on young animals of cattle. 3. Features of conducting scientific and economic experiments on sheep (sheep breeds). 4. Features of conducting scientific and economic experiments on adult horses (mare) 5. Features of conducting scientific and economic experiments on agricultural poultry 6. Systematization, biometric processing and analysis of research results
Language of teaching	**Ukrainian**

Name of the discipline	Methodology and organization of scientific research
Lecturer	Sobolev Oleksander Ivanovych Doctor of agricultural sciences, Professor of the Department of technology in poultry and pig breeding
Year of study, semester	5th year, 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study the discipline is the acquisition of such knowledge and skills by students: *Knowledge* – conceptual-categorical apparatus in the field of scientific activity; – organizational structure of science in Ukraine; – the nature and role of scientific research, their main types, subjects and levels of implementation of scientific research results; – basic principles of scientific methodology and stages of modern scientific research in the field of animal husbandry; – the modern classification of experiments; – features of scientific research on different species and technological groups of farm animals and poultry; – methodical bases of manual economic efficiency of scientific researches – main types and sources of scientific information; – the compositional structure and the procedure for presentation the results of own research in a scientific monograph, scientific article and theses of the scientific report. *Skills* – to use project management approach for planning, organizing and conducting scientific research – to substantiate the relevance of the scientific problem and determine the research topic; - to determine aims and object of scientific research; – to develop a methodology and justify the choice of methods of scientific research; – to make a calendar plan and estimate for the scientific research; – to keep records of research results and scientific documentation; – to systematize and mathematically process research results and formulate conclusions; – to evaluate the economic efficiency of scientific research; – to carry out approbation the results of scientific research; – to use information and communication technologies for

	receiving, processing, preservation and disseminate professional and scientific and technical information; – to identify and analyze information from various sources for the organization and provision of scientific and innovative activities, in the preparation of scientific publications and reports.
Description of the discipline	
Prerequisites needed for studing the discipline	Not
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lecture** 1. The concept, content and functions of science. 2. Basic principles of scientific methodology. 3. Structure of the study: substantiation of relevance, definition of the research topic, its aims and objectives. 4. Classification of experiments. 5. Conduct measurements during experimental research. 6. Methodical bases of estimation of economic efficiency of scientific researches. 7. General provisions on intellectual property law. **Topics of seminar** 1. Zoo-hygienic control of stable climate in animal husbandry and methods for determining its main parameters 2. Indicators of productivity of young cattle grown for meat and methods of their determination. 3. Performance indicators of replacement young cattle and methods for their determination. 4. Indicators of productivity of cows and the methods of their determination 5. Reproductive and productive qualities of sows and breeding boar and methods of their determination. 6. Indicators of productivity of fattening store pigs and methods of their determination. 7. Indicators of productivity of farm poultry of industrial and pedigree herds and methods of their determination. 8. Indicators of meat productivity of farm poultry and methods of their determination. 9. Indicators of meat productivity of sheep and quality of lamb. Methods of their determination. 10. Indicators of wool productivity of sheep and wool quality. Methods of their determination. 11. Indicators quality of honey and methods of their

	determination. 12. Reproductive and productive qualities of fish breeders and methods of their determination. 13. Calculation of economic efficiency of the results of completed scientific research. 14. Publication of the results of scientific research.
Language of teaching	Ukrainian

Name of the discipline	**Technological processes and equipment in the production of livestock products**
Lecturer	Sobolev Oleksander Ivanovych Doctor of agricultural sciences, Professor of the Department of technology in poultry and pig breeding
Year of study, semester	4th year, 1st semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study the discipline is the acquisition of such knowledge and skills by students: *Knowledge* – principles of rational organization of the production process; – classification of technological processes; – the main elements of the technological process and types of technological operations in the production of livestock products (milk, meat and eggs); – classification of machines and equipment for keeping animals and poultry, preparation and distribution of feed, milking cows, primary processing of milk and incubation of eggs; – basic requirements for machines and equipment; – technical characteristics of modern machines and equipment to reduce labor costs and operating costs per unit of production in a particular technology and organization of production; – engineering and technical solutions, modern scientific achievements, advanced production experience to ensure the implementation of technological processes and operations in the production of a particular type of livestock products. *Skills* – to design complex mechanical technological processes and flow technological lines for the production of livestock and poultry products with the use of advanced and innovative technologies;

	– to develop technological and design-technology schemes to determine the organizational modes of production, the optimal composition of technical means of mechanization of technological processes of flow lines of farms and complexes; - to prove the need for the introduction of new intensive technologies, to carry out the technologization of production and to apply effective machine use; – develop technical documentation; – to develop measures for safety, environmental protection in the implementation of technological processes of livestock production; – to control the course of technological processes of livestock production in order to perform quantitative and qualitative indicators of production.
Course description	
Prerequisites needed for studing the discipline	Not
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lecture** 1. Manufacturing and technological processes of production. Machines and equipment for cattle breeding. 2. Types of technological operations during machine milking cows. Machines for milking cows. 3. Milking machines for cows (continued). 4. The main elements and operations of the technological process of pork production. Machines and equipment for pig breeding. 5. Equipment for keeping breeding stock and piggery. 6. Norms of technological designing of enterprises of poultry farming. 7. Technological process of production of food eggs. Cage equipment for laying hens. 8. Technological process of meat production of broiler chickens. Equipment for growing broiler chickens. **Topics of seminar** 1. Equipment for keeping cows. 2. Machines for the preparation and distribution of feed mix and making litter. 3. Machines for primary processing of milk. 4. Machines and equipment for feeding pigs. 5. Equipment for drinking pigs. 6. Alternative equipment for industrial farm poultry and pedigree herd.

	7. Equipment for collecting, transporting, sorting and packing eggs. 8. Equipment for egg incubation.
Language of teaching	Ukrainian

Name of the discipline	Technology of production of goods of the pig breeding
Lecturer	Fesenko Vasily Fedorovich Candidate of Agricultural Sciences, Associate Professor of the Department of Poultry Production and Pig Production Technology
Year of study, semester	4 year, 1 semester
Faculties where the students are offered to study the discipline	Biological-technological faculty The result of learning discipline is the acquisition of such knowledge and skills by students: Knowledge:
List of competencies and related learning outcomes that provide discipline	Know the biological characteristics of the pigs. Know the basics of their maintenance and feeding. Know the basic English terminology in pig breeding. To know the main international and domestic normative documents concerning technological requirements of production. Know the methods of assessing pigs. Know the features of breeding work. Know the basics of industry development planning. Know the basic approaches to providing the necessary resources • Know and be able to calculate the basic technological parameters of the work of pig farms Know the basic approaches to determining the need for industrial premises • Know the methods of calculating the need for feed Be able to determine the need for sown areas under feed crops. Be able to evaluate the productive qualities of pigs. Own the basic methods of determining the categories of fattening pigs, the release of slaughter products, assess mso-sebaceous qualities.

	Skill: - apply the basic methods of assessing the exterior and constitution of pigs; - to determine the productive qualities of horseradish, sows, young animals for raising and fattening; - to determine absolute and relative increment of pigs; - to select the best pigs by the method of control growth and control fattening; - To make rations and recipes of mixed fodder for all age groups of pigs; - to evaluate pigs by results of boniting; - to prevent the spread of infectious diseases of pigs; - To present the results of their own theoretical and practical research on pig production.
Description of the discipline	
Prerequisites needed for studing the discipline	None
Students' limit in a group	25 students
Topics of in-class activity	**Themes of lectures** 1. Status and main directions of development of pig breeding in Ukraine and other countries of the world 2. Constitution, exterior, interior of pigs, their connection with productivity 3. Biological and economic peculiarities of pigs taking into account their changes in transfer to industrial pork production technology 4. Types of pig farms and the organization of herds in the year-round uniform production of pork 5. Origin, breed and breed types of pigs 6. Biological basics of reproduction of pigs 7. Intensive use of sows and their multiplicity increase 8. Fertility technology, feeding and maintenance of subsistence sows and pigs-sysunov. 9. Technology of growing offspring and repair young animals 10.The main factors that determine success, fattening technology, pork quality, implemented by the population

	11. Tasks and methods of breeding work in pig farms 12.Технологія переробки продукції свинарства Pig production processing technology 13.The main diseases of pigs 14. Management in pig breeding 15. Marketing in pig breeding 16. Business aspects of pork production **Themes of practical classes** 1. Safety rules when working with different sex-age groups of pigs. 2. Exterior and constitution of pigs 3. Productive quality of pigs. 4. Оцінка м'ясо-сальних якостей свиней. 5. Estimation of the horses and moths by the method of control growth and control fattening. 6. Pigs breed 7. iZootechnical accounting on commodity farm and industrial complex 8. Bonitation of the repair young 9. Sowing bonus. 10. Boning of horses. 11.Report on the results of boning the pigs of the breed 12. Technological production schemes. 13. Determination of the basic technological parameters of the pig enterprise 14. Structure of the herd and drawing up a plan for pairing and farrowing
Language of teaching	Ukrainian, English

Department of Technology for the Production of Milk and Beef

Name of the discipline	Technology of milk and beef production
Lecturer	Lutsenko Mariia Mikhailivna doctor of agricultural sciences, Professor of the Department of Technology of Milk and Meat Production Borshch Oleksandr Vasylovych Candidate of Agricultural Sciences, Associate Professor of the Department of Technology for the Production of Milk and Beef
Year of study, semester	4 course, 1-2 semester 3 SP, 1-2 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - biological characteristics of cattle; - peculiarities of breeds of dairy, meat and combined productivity; - organization of cattle reproduction and raising of young animals; - methods of selection work at pedigree and commodity farms; - organization of technological processes in cattle breeding; - algorithms for modeling of technological processes in cattle breeding. *Skills:* - to evaluate biological and environmental indicators at cattle breeding; - to use selection methods to improve the breeds and types of livestock; - to organize reproduction of cattle and raising of young animals; - to conduct zoological and breeding work at farms; - to manage the technological process of breeding replacements young animals of the cattle raising; - to raise and evaluate bulls; - to simulate technological processes at cattle breeding.
Description of the discipline	
Prerequisites needed for studing the discipline	*Knowledge of morphology, physiology, animal genetics, mechanization and equipment of farms, fundamentals of economics and organization of production.*
Students' limit in a group	25 students

Topics of in-class activity	**Topics of lectures** 1. Introduction. Importance, current state and prospects of cattle breeding in Ukraine 2. Biological features of cattle 3. The origin of the cattle 4. Exterior and constitution of cattle 5. Breeds of cattle - specialized and combined 6. Zoo-technical bases of the herd reproduction. Sexual and economic maturity of cattle. Calving interval and its periods 7. Milk productivity 8. Meat productivity 9. State standard for cattle intended for slaughter. 10. Concept about technology, technological and work process in breeding 11. Modern technologies for the maintenance of dairy cattle 12. Basic premises and structures of the farm 13. Organization of cows feeding 14. Placing and grouping dairy cattle at the farm 15. Organization of the technological process management 16. Conditions for obtaining of high-quality milk 17. Modern milking technology 18. Zoo-technical aspects of machine milking of cows at farms and complexes 19. Organization of rest and taking exercise of cows at farms 20. Removal of manure at the farm 21. Holding animals in maternity wards 22. Summer maintenance of cattle 23. Theoretical foundations of breeding at cattle breeding 24. Evaluation and selection of animals for breeding in herds of dairy cattle 25. Methods of assessing of the pedigree by the quality of descendants 26. Bonitation of cattle 27. Selection in cattle breeding 28. Methods of cattle breeding 29. Preliminary, operational and post operational modeling of processes in cattle breeding 30. Technology of raising and using bulls 31. Scientific basis of heard replacements raising 32. Systems and methods of keeping and feeding of young animals of all ages 33. Features of heard replacements raising at different farms 34. Modern technologies of heard replacements heifers raising 35. Types of farms for cattle raising and fattening 36. Features of young animals raising for meat during the milk and after the milk period 37. Cattle fattening

	38. Beef production technology in dairy cattle breeding at specialized farms 39. Features of specialized meat cattle breeding 40. Modeling of the process of cattle raising and fattening 41. Economic evaluation of various technological solutions for cattle raising and fattening **Themes of practical classes** 1. Zoo-technical accounting at breeding 2. Historical aspects of the formation of the constitution and exterior doctrine 3. Daily behavior of dairy cattle 4. Behavior of cows in pasture 5. Sexual and maternal behavior of cows 6. Breed of milk production orientation 7. Generations of the combined orientation of productivity 8. Breeds of meat production orientation 9. Milk productivity of cows 10. Meat productivity of cows 11. The main types of cattle productivity 12. Biological features of cows lactation. Milking of cows and milk productivity. 13. Analysis of technological processes and operations in dairy cattle breeding 14. Streaming-phase system of replacements heifers raising 15. Streaming-department system of cows maintenance 16. Creation and use of pastures in cattle breeding 17. Development of a program for increasing and intensifying of milk production 18. Planning of insemination, start and cow calving. 19. Factors that determine the structure of cattle
Language of teaching	Ukrainian

Name of the discipline	**Beekeeping production technology**
Lecturer	Bezpalyi Ivan Fedorovich Senior Lecturer of the Department of Technology of Milk and Meat Production Pirova Liudmyla Viktorsvna Candidate of Agricultural Sciences, Associate Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	3 course, 6 semester
Faculties where the students	The Faculty of Biology and Technology

are offered to study the discipline	
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: ***Knowledge*** - features of the structure and function of individuals of bee families, their livelihoods in different periods of the year; - technology of keeping bees in beehives of different systems and receptions of propagation of bee families; - Honey-bearing base, technique and organization of pollination by bees of agricultural crops; - chemical toxicosis and other diseases of bees, methods of their prevention and treatment; ***Skills*** - to manage the life of bee colonies, to assess their condition; - to ensure the rational maintenance and use of bees and food supply; - to develop measures for the recovery of sick bee colonies; - to make the fodder balance of the apiary and the schedule for the use of bees in the honey collection and pollination of agricultural crops; - to determine the honey resources of the area and the number of bee colonies necessary for the development of honey reserves in the area; - to develop measures to improve honey resources and ensure the nectar conveyor; - to develop a plan for bringing bees to pollinating crops and placing them on the fields; - to organize honey pumping at the apiary; - to organize the collection of pollen and other products, to ensure their conservation and storage; - to assess the quality of bee products; - to keep zootechnical and pedigree accounting and economic analysis of the apiary; - to carry out breeding work and to ensure the planned withdrawal of queens; to protect the bees as an important chain of ecology.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
	Topics of lectures 1. The value of beekeeping, the composition of the bee family

Topics of in-class activity	and its vital activity during the year 2. Reproduction of stasis of bee colony and methods of reproduction of bee colonies 3. Hives, inventory and pasture buildings 4. Tribal work in beekeeping and district bees breeds 5. Spring work on the pasture and preparation of the bee family for the medical college 6. Methods of keeping bee colonies 7. Preparation of bees for wintering and its carrying out 8. Methods of maintenance of bee-seed in hives of different systems 9. The content of bees in the pavilions: advantages and disadvantages 10. Feeding base of beekeeping and pollination activity of bees 11. Diseases and pests of bees 12. Receiving environmentally friendly beekeeping products **Themes of practical classes** 1. Morphological structure of honey bee 2. Features of the morphological structure of the uterus, drones, working bees 3. Anatomical and physiological features of honey bees 4. Nervous system and behavior of bees 5. Nest of bees, wax buildings and artificial wax 6. Sexual system and reproduction of bees 7. Formation of new bee-eaters 8. Deletion of the bee uterus 9. Hollows, their classification and structure 10. Bee-keeping equipment, beekeeping buildings and mobile beekeeping facilities 11. Inventory for the acquisition of additional beekeeping products 12. Bonating of bee families on apiaries 13. Spring survey of bee families 14. Control of the quality of feed and wintering of bees 15. Fodder base of beekeeping and characteristics of the main honey 16. Calendar of flowering of honey and forage balance of apiaries 17. Pollination by bees of agricultural crops 18. Diseases of bees and measures to combat them 19. Pests and enemies of bees 20. Production and primary processing of basic beekeeping products 21. Production and primary processing of additional beekeeping products 22. Economic analysis of the work of the apiary

Language of teaching	Ukrainian, English
Name of the discipline	Beekeeping production technology
Lecturer	Bezpalyi Ivan Fedorovich Senior Lecturer of the Department of Technology of Milk and Meat Production Pirova Liudmyla Viktorsvna Candidate of Agricultural Sciences, Associate Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	3 course, 6 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: Knowledge - features of the structure and function of individuals of bee families, their livelihoods in different periods of the year; - technology of keeping bees in beehives of different systems and receptions of propagation of bee families; - Honey-bearing base, technique and organization of pollination by bees of agricultural crops; - chemical toxicosis and other diseases of bees, methods of their prevention and treatment; Skills - to manage the life of bee colonies, to assess their condition; - to ensure the rational maintenance and use of bees and food supply; - to develop measures for the recovery of sick bee colonies; - to make the fodder balance of the apiary and the schedule for the use of bees in the honey collection and pollination of agricultural crops; - to determine the honey resources of the area and the number of bee colonies necessary for the development of honey reserves in the area; - to develop measures to improve honey resources and ensure the nectar conveyor; - to develop a plan for bringing bees to pollinating crops and placing them on the fields; - to organize honey pumping at the apiary; - to organize the collection of pollen and other products, to ensure their conservation and storage; - to assess the quality of bee products; - to keep zootechnical and pedigree accounting and economic analysis of the apiary; - to carry out breeding work and to ensure the planned

	withdrawal of queens; to protect the bees as an important chain of ecology.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. The value of beekeeping, the composition of the bee family and its vital activity during the year 2. Reproduction of stasis of bee colony and methods of reproduction of bee colonies 3. Hives, inventory and pasture buildings 4. Tribal work in beekeeping and district bees breeds 5. Spring work on the pasture and preparation of the bee family for the medical college 6. Methods of keeping bee colonies 7. Preparation of bees for wintering and its carrying out 8. Methods of maintenance of bee-seed in hives of different systems 9. The content of bees in the pavilions: advantages and disadvantages 10. Feeding base of beekeeping and pollination activity of bees 11. Diseases and pests of bees 12. Receiving environmentally friendly beekeeping products **Themes of practical classes** 1. Morphological structure of honey bee 2. Features of the morphological structure of the uterus, drones, working bees 3. Anatomical and physiological features of honey bees 4. Nervous system and behavior of bees 5. Nest of bees, wax buildings and artificial wax 6. Sexual system and reproduction of bees 7. Formation of new bee-eaters 8. Deletion of the bee uterus 9. Hollows, their classification and structure 10. Bee-keeping equipment, beekeeping buildings and mobile beekeeping facilities 11. Inventory for the acquisition of additional beekeeping products 12. Bonating of bee families on apiaries 13. Spring survey of bee families 14. Control of the quality of feed and wintering of bees 15. Fodder base of beekeeping and characteristics of the main

	honey 16. Calendar of flowering of honey and forage balance of apiaries 17. Pollination by bees of agricultural crops 18. Diseases of bees and measures to combat them 19. Pests and enemies of bees 20. Production and primary processing of basic beekeeping products 21. Production and primary processing of additional beekeeping products 22. Economic analysis of the work of the apiary
Language of teaching	Ukrainian, English

Name of the discipline	**Organic livestock farming**
Lecturer	Liskovych Volodymyr Andriiovych Candidate of Agricultural Sciences, Associate Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	1 course, bachelors, 2 semester
Faculties where the students are offered to study the discipline	The biologist - technological faculty
List of competencies and learning outcomes provided by the discipline	Acquisition by students of such knowledge and abilities is result of training in discipline: **Knowledge** - the main terms in the conditions of organic production; - requirements of the European legislation on productions of organic products of agriculture; - the general principles of state regulation in the sphere to organic production, the address and markings of organic products; - Main requirements to organic production of crop production and livestock production (methods of maintenance, cultivation, feeding, prevention of diseases, cleaning, dizenfekts i ï, etc.); - requirements in the list of substances that is allowed to be used in the course of organic production, exceptions of requirements to organic production; - Basic provisions international cooperation of Ukraine in the sphere to organic production, the address and markings of organic products. **Ability**

	- to analyze perspective and innovative production technologies of organic milk of cattle; - To do to the teoritiyena and practical justification of application of the production technology of meat of cattle; - to analyze environmentally friendly technologies of receiving organic pork; - theoretically and practically to prove environmentally friendly technologies of receiving organic products of poultry farming; - to make calculations at application alternative fuel and energy resources, biomass potential in Ukraine and anaerobic processing of biomass; - to develop parameters of technological processes, proceeding from specific conditions of production and the system of estimation of their performance in the conditions of organic production of livestock production; - to introduce in production innovative production technologies of organic products of livestock production on the example of the leading enterprises for production of organic products.
Description of discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Subjects of lectures** 1. The current state and the prospects of development in Ukraine, Europe and in the world of innovative energy saving technologies in livestock production. 2. Definition of the main terms in the conditions of organic production. 3. Requirements of the European legislation on productions of organic products of agriculture. 4. The general bases and powers of state regulation in the sphere to organic production, the address and markings of organic products. 5. General requirements to organic production of crop production and livestock production (methods of maintenance, cultivation, feeding, prevention of diseases, cleaning, dizenfekts i ï, etc.). 6. Certification of organic production and address of organic products. Markings and selling of organic products. 7. The state control in the sphere to organic production, the address and markings of organic products. 8. The international cooperation of Ukraine in the sphere to organic production, the address and markings of organic products.

	9. The main actions and rules by production of organic products of crop production and livestock production. 10. Perspective production technologies of organic milk of cattle. 11. Perspective production technologies of organic meat of cattle. 12. Environmentally friendly technologies of receiving organic pork. 13. Environmentally friendly technologies of receiving organic products of poultry farming. 14. Alternative fuel and energy resources, biomass potential in Ukraine and anaerobic processing of biomass 15. Innovative production technologies of organic products of livestock production on the example of the leading enterprises for production of organic products. **Subjects of a practical training** 1. Studies of basic provisions of the law of Ukraine no24596 VIII (10.07.2018 river) "About the basic principles and requirements to organic production, a turn and marking of organic products". 2. The basic principles and requirements to the address and markings of organic products in Ukraine and in the world. 3. Requirements of the European legislation on productions of organic products of agriculture. 4. The international cooperation of Ukraine in the sphere of organic production, to the address and markings of organic products 5. The current state and the prospects of implementation of power resource-saving technologies in pig-breeding in Ukraine and in the world. 6. Environmentally friendly technologies of receiving organic products of poultry farming. 7. Power assessment of technological processes and power value of products of the branches of crop production and livestock production. 8. Utilization of warmth in the systems of creation of a microclimate in rooms for keeping of animals. 9. To study possibilities of decrease in energy consumption and prime cost of dairy products due to use of thermal energy of the produced milk. 10. Determination of volumes of secondary raw materials and calculation of a possible exit of biogas on livestock farms and complexes on production of organic products. 11. To study efficiency of use of manure in the conditions of organic production. 12. To make model of a full-fledged ecosystem.
Language of teaching	The Ukrainian

Name of the discipline	Ethology of farm animals
Lecturer	Borshch Oleksandr Oleksandrovych Candidate of Agricultural Sciences, Assistant of the Department of Technology for Milk and Meat Production
Year of study, semester	M1, 1 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - biological peculiarities of animals; - design and technological solutions of modern farms; - technical and economic indices of farm machinery and equipment; - organizational and managerial methods of conducting livestock industries; - peculiarities of gregarious, fodder, comfort, sexual, maternal and productive reactions of farm animals depending on age, physiological state and season of the year; - The main life manifestations of farm animals, depending on the used conditions in the premises and during being in pasture. *Skills* - to manage the technological processes of livestock production, taking into account the ethological indicators; - to identify and describe the features of the main forms of animals behavior; - to record and register with the help of special equipment, the time spent on the basic vital manifestations of animals; - to draw up conclusions (summary) about the peculiarities of the farm animals behavior on the basis of observations, descriptions and various forms of registration; - To use indicators of gregarious, fodder, comfort, sexual, maternal and productive reactions of farm animals when developing normative parameters for the maintenance and exploitation of cows at new and reconstructed farms.
Description of the discipline	
Prerequisites needed for studing the discipline	No 25 students

Students' limit in a group	
Topics of in-class activity	**Topics of lectures** 1. Development of the science about animal behavior 2. Stress, adaptation and acclimatization of animals 3. Forms of behavior 4. Behavioral reactions of cattle. The ethology of dairy cows 5. Behavioral reactions of pigs and sheep 6. Behavioral reactions of horses 7. Behavioral reactions of poultry **Themes of practical classes** 1. Methods, principles and tasks of farm animals' behavioral reactions studying. 2. Principles of behavior classification. Classification of the main forms of behavior: reproductive, individual and social one. 3. Influence of animal's behavior on productivity, stress, adaptation, and acclimatization of animals 4. Study of behavioral reactions of cattle (calves) 5. Biological features of pigs and cows. 6. Ethology of young animals. Behavior of newborn foals. Behavior of ablactated foals. 7. Study of behavioral reactions of fish 8. Influence of the system, method and way of keeping changes on the behavior of sheep. Vital displays in adult individuals 9. Features of display of ritual behavior and communications in rabbits. Peculiarities of young rabbits' behavior
Language of teaching	Ukrainian

Name of the discipline	**"Innovative Technologies in Milk and Beef Production"**
Lecturer	Lutsenko Mariia Mykhailivna doctor of agricultural sciences, professor of the Department of Technology of Milk and Meat Production
Year of study, semester	M2, 1 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and	The result of learning of the discipline is the acquisition of such

learning outcomes provided by the discipline	knowledge and skills by students: *Knowledge* - current state and prospects of innovative technologies introduction into milk and beef production; - the latest volumetric planning and technological solutions for livestock facilities; - modern resource-saving technologies of milk and beef production; - innovative milking technologies of cows; - the latest technologies of primary milk processing; - new systems of forage provision and feeding of high-yielders; - Advanced resource-saving technologies for cleaning and utilization of manure. *Skills* - to develop new volumetric-technological and technological solutions of premises for the maintenance of different age groups of animals; - to develop innovative technological schemes for the production of milk and beef; - to make a choice of modern equipment and machines for provision of farms' innovative functioning; - to develop modern feeding technology of different age groups and breeding replacement young animals of the cattle; - to calculate the need in fodders and land for their production, depending on the planned productivity of the farm; - to choose a complex of machines and technologies for harvesting of high-quality fodders; - to calculate the amount of farm waste and offer innovative technologies for their processing.
Description of the discipline	
Prerequisites needed for studing the discipline	Technology of milk and beef production, meat cattle breeding
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures**

	- Biological, technological and technical aspects of innovative technologies development for milk and beef production; - The main output criteria for the creation of modern farms of the new generation; - General concepts about resource-saving technologies of milk and beef production; - Volumetric planning and technological solutions of new-generation livestock farms with resource-saving production technologies; - Reconstruction of existing premises as one of the ways of innovative technologies introduction into milk and beef production; - Basic breeds of cows and fattening of young animals used in intensive technologies; - Systems for the formation of dairy herds for modern dairy farms and grouping of cows; - Feeding of cows of different physiological conditions and young animals under conditions of innovative technologies; - To calculate the need of fodders and sown areas for farms with 500 and 1000 cows; - Modern machines and equipment for harvesting, storage, preparation and distribution of fodders; - Anatomy of the udder and physiological aspects of the milking process; - Mechanized milking of cows, types of milking machines; - Organization of obtaining of high quality milk and criteria for its evaluation; - Processing of farm production waste at biogas plants. **Themes of practical classes** - Examination and generalization of cows' maintenance systems at farms of different typical sizes; - Calculation of the optimal herd structure at farms of various standard sizes; - Formation and placement of different age and physiological groups at farms of different typical sizes; - Development of design and technological solutions for the reconstruction of existing livestock buildings for the resource-saving technologies of milk production; - To develop design and technological solutions for the reconstruction of premises with the width of 12, 21 and 24 m; - Familiarization with the herd of dairy breeds, which are currently used at modern farms; - Methodology and practice of a dairy herd formation for 500 cows. Determination of the structure of a herd of dairy farms for 500 and 1000 cows; - Calculate the need for feed and sown areas for farms at 500 and

	1000 cows - Familiarization with harvesting technologies and storage of various types of fodders at modern farms; - Reflex of milk ejection and its realization during milking; - Study of cows' milking technology in milking rooms with plants of the "Parallel", "Carousel", "Christmas tree" type and using robotic milking systems; - Determination of milk quality when using different milking systems; - Traditional beef production technologies at farms of various standard sizes; - Familiarization and research of the waste products processing process of dairy farms at the biogas plant of Terezine LLC.
Language of teaching	**Ukrainian**

Name of the discipline	**Horse breeding**
Lecturer	Liskovych Volodymyr Andriiovych Candidate of Agricultural Sciences, Associate Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	4 course, 1 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - knowledge of the biological characteristics of horses associated with their maintenance, care, feeding, reproduction and use; - the main technological solutions for young animals raising with different purposes; - rules for testing of pedigree horses at hippodromes and participation in eventings; - the basics of management and marketing in horse breeding; - horses identification system; *Skills* - to evaluate the constitution, exterior, intelligence and condition of the horses; - to evaluate pedigree, working, productive and sporting value of horses; - to keep records and of pedigree breeding work; - to bonitate horses; - to plan the development of the industry; - to determine the normal body mass and its deviation; - to use the best practices of domestic and foreign science and practice; - to promote products and sell horses.
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures**

	1. Introduction. Past, current and future of horse breeding in Ukraine 2. Constitution and exterior of horses 3. The body points, colors, spots, stars, signs and allures of the horses 4. Breed of horses. 5. Biological features of horses' reproduction 6. Organization of trial and pairing of horses 7. Young animals raising 8.Working productivity 9. Productive horse breeding 10. Equestrian sport and tourism 11. Unconventional horse breeding 12. The structure of pedigree work in horse breeding 13. Bonitation of horses, breeding methods and hybridization 14. State measures for horse-breeding **Themes of practical classes** 1. Basic safety rules when working with horses 2. Features of evaluation of the horse's body point of different productive orientations. Methods of horses' exterior estimation 3. The drawbacks and disadvantages of horses' exterior of different productive orientations 4. Classification and characteristic of colors, spots, stars, signs of horses and genetic conditionality in horse-breeding. Rules for describing them in breeding documentation 5. Methods of determination of horses age by teeth and some external signs 6. Determination of the indexes of the body's organization and live weight by the main measurements of horses of different productive orientation 7. Technology for reproduction of horses 8. Operational control of young horses development 9. Types of harnesses. The technique of putting a horse into a one-arched harness 10. Types and structure of saddles, saddle rules and riding 11. Methods of recording and characteristics of milk production of mares 12. Methods of accounting and characteristics of meat productivity of horses 13. Bonitation of horses and requirements to subjects of pedigree business in horse breeding 14. Drawing up and detailed analysis of genealogy of stallions and mares of different breeds
Language of teaching	Ukrainian

Name of the discipline	**Manufacture technology of rabbit and animal breeding production**
Lecturer	Lastovska Iryna Oleksandrivna Candidate of Agricultural Sciences, Assistant Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	3 course, 6 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - the origin and domestic changes of rabbits and animals of cell breeding; - biological and economic features of rabbits and animals of cell breeding; - regularity of formation of meat, skin and wool productivity; - breeds of rabbits, breeding animals and basic pedigree work with them; - modern technologies of keeping, normalized feeding, reproduction and breeding of rabbits and animals, production of meat and skin products and their initial processing; *Skills* - To evaluate the meat productivity of rabbits during the life and after slaughtering periods when selling animals to meat and further processing of products; - to sort the skins of rabbits and animals at full length, length and density of hair, size and categories of the skin defects, and wool according to the length, felting and littering; - to distinguish breeds of rabbits and animals of different production lines, to evaluate them according to the type of hair; - to carry out bonitation of rabbits and animals in accordance with the instructions, to determine the animal class, selection and production purpose according to the results of bonitation; - to choose progressive technologies of rabbit meat production and animal breeding; - to substantiate all calculations, organize and technologically implement the system of reproduction, feeding and maintenance of rabbits and animals during the productive year; - to make a production calendar for rabbit and fur fiber farms, taking into account during the productive year the sex and age groups of rabbits and animals, their movement, clean-up times and kindling (whelping) of females, the age and terms for the removal of infant rabbits and puppies, realization of young

	animals and their selection and production purposes . - to analyze activity of rabbits and animal farms and to develop production programs and plans for them; - to determine the effectiveness of the proposed technologies; - to manage the technological process of products' manufacture at a rabbit and animal farm
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. Characteristics of rabbit breeding as an industry of productive livestock. The origin and biological peculiarities of rabbits 2. Pedigree work, reproduction and breeding of rabbits 3. Systems and methods of retention and feeding technology of rabbits 4. Technology of meat-and-skinned and wool rabbit breeding. Intensive rabbit meat production technology 5. Organization of work in rabbit breeding and prevention of rabbits' diseases 6. Objects of furry animals, pedigree work and a section of fur animals 7. Technology of fur animals welfare. The main forage and technology of fur animals feeding **Themes of practical classes** 1. Body structure, exterior and rabbit constitution 2. Morphological-physiological features of the exterior, digestion and reproduction of rabbits 3. Economic and biological features of rabbits, account of their growth 4. Morphological structure of skin-hair cover and rabbits and animals change of coat 5. Breeds of rabbits in Ukraine 6. Sexual maturity and principles of making of the fur fiber calendar 7. System of rabbits maintenance and the staff of a rabbit farm 8. Diseases of rabbits and general zoo-technical and hygienic - preventive measures at the rabbit farm 9. Biological features of predators and rodents 10. Species, breed groups and colored forms of animals

	11. Development of technology for animals keeping. Production facilities and equipment for animal farms. 12. Preparation of a schedule for the reproduction and care of animals 13. Bonitation of fur animals according to the current instruction 14. Regularity of cage animals change of coat and assessment of fur skins quality
Language of teaching	Ukrainian, English

Name of the discipline	**Modeling of technological processes in farm animal production**
Lecturer	Kosior, Lesia Tarasivna Candidate of Agricultural Sciences, Associate Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	M1, 2 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - modern advanced technologies of farm animal production in the amount necessary for the solution of production problems; - methodological principles of the production technological process modeling of one or another type of farm animal products; - Types of modeling, their essence and methodical approaches to modeling of technological processes in livestock breeding; - mode of mathematical formalization of conditions for economic and technological processes in livestock breeding; - typical economic and mathematical models of technological processes in livestock breeding; *Skills* - to substantiate scientifically the technological scheme of the production process of far animal products for a particular farm, taking into account the bases of reproduction of the herd, a forage base and a level of feeding of animals, systems of maintenance and use;

	- to substantiate and set production tasks; - to formalize mathematically the conditions of the system's functioning in the economic environment under certain limits, to reflect these conditions in the form of mathematical inequalities and equations; - to be able to develop different types of models of technological process of farm animal production the basis of normative documents, using computer technology and methodical principles;
Description of the discipline	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. Technological processes and systems 2. Production and technological processes 3. General characteristics of technological processes at livestock enterprises 4. Technological processes and operations in cattle breeding, pig breeding, sheep breeding, poultry breeding, and other livestock industries 5. Fundamentals of technological process modeling 6. Modeling of livestock facilities 7. Study of the milk production technology and technological processes in the free-stall housing of cows 8. Modeling of technological processes for raising of replacements heifers 9. Modeling of technological processes of beef production 10. Study of the technology of beef production and technological processes at meat cattle breeding 11. Features of modeling of technological processes in pig breeding, sheep breeding and poultry breeding 12. Simulation of breeding programs for breeding companies which breed cattle, poultry and bees 13. Determination of the tact, rhythm and the front of the farm works 14. Energy-saving technologies of production of farm animal products 15. Studying the norms of technological design **Themes of practical classes** 1. Modeling of technological processes of replacements heifers

	raising 2. Modeling of the technological processes of beef production
Language of teaching	Ukrainian

The name of the discipline	**Meat Cattle Breeding**
Lecturer	Lastovska Iryna Oleksandrivna Candidate of Agricultural Sciences, Assistant Professor of the Department of Technology of Milk and Meat Production
Course and semester, which is planned to study the discipline	4 course, 5 semester
The faculties and students which are invited to study the discipline	The Faculty of Biology and Technology
List of competencies and related outcomes of learning that the discipline provides	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - Regularities of meat productivity formation in ontogenesis, principles of livestock reproduction and energy-saving technologies of meat cattle breeding production; *Skills* - to assess the exterior, constitution and condition of animals; to identify livestock; to provide breeding records at the farm; to identify the main and secondary characteristics of cattle productivity; to organize reproduction of livestock; to evaluate and select animals according to the genotype and phenotype; to apply the latest breeding methods; choose a breed adapted for breeding under specific conditions; to carry out economic efficiency of fodder crops and to organize feed base; to use nutrition and retention factors for economical and progressive technologies for raising of young animals, raising of livestock productivity and production; to estimate the quantity and quality of manufactured products and be able to realize it economically; - to develop models of technological process in meat cattle breeding, selection of animals and production of forage and fodder additives; to organize an enterprise on the basis of state and private property and business in the field of service and products production; to plan financial activity of the enterprise; to draw up a business plan for products production; to adjust the use of nutritious and biologically active substances in order to stimulate digestion and increase the productivity of animals; - to stimulate, evaluate and predict the meat productivity of animals; to use modern devices for researches, to select and

	analyze methods and methodology of research, to interpret the obtained results, comparing with corresponding norms and to draw conclusions about the physiological state of animals, the quality of products and raw materials of animal origin; - to accumulate and analyze data of breeding records, process them with a PC for selection, determine the pedigree value of animals and evaluate them according to a set of features; - to calculate the technological process of cattle products treatment, to carry out techno-chemical control over the storage of finished products - to determine the influence on the population of individual factors and to maintain and improve it, to manage the selection process in populations, to improve individual descendants quality, to develop animal breeding programs; to characterize the quantitative and qualitative characteristics of the population, the influence on them of genetic and environmental factors, and to characterize different methods for the creation of new breeds and types of animals, being familiar with methods for determining the pedigree value of animals and the laws of genetics regarding inheritance and variability, using special techniques, to predict the productivity of animals; - to use the Laws of Ukraine regulating the legal, organizational and economic foundations of breeding work in practical work aimed at improving of animals' breeding qualities, to perform selection work at a level that provides indicators in accordance with the minimum requirements, and to improve them to levels of subjects of breeding business, to plan and solve organizational and breeding issues for breeding testing, to develop recommendations for the appropriate use of breeds or their structural units; - to evaluate the properties of fodder from the vegetative parts of plants during harvesting in different phases of their vegetation; to identify rational ways of harvesting and preparation of fodder for feeding, depending on economic conditions and economic expediency; - to assess the quality of green fodder, hay, silage and haylage according to current standards, and rational ways of preparing them for feeding; - to apply the newest and most perspective directions of feeding, maintenance and industrial exploitation in existing technological processes and during modeling of new ones.
Description of the discipline	
Prerequisites needed for studing the discipline	No

Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. Meat cattle breeding: characteristics of the industry, status and prospects of development in Ukraine and abroad. 2. Scientific and practical bases of formation of meat productivity of cattle breeds. 3. Biology of meat cattle orientation dealing with productivity and technological qualities of meat cattle. 4. Breeds of meat cattle production orientation. 5. Pedigree business in specialized meat cattle breeding. 6. Selection of meat cattle orientation of productivity. 7. Organization of reproduction of meat cattle herd and its intensification. 8. Systems and methods of meat cattle stockkeeping . 9. The technology of the use of a breeder flock and the intensive growing of heifers in meat cattle breeding. 10. Technology for the production, cultivation and use of breeding livestock of specialized meat breeds. 11. Energy-saving technologies of beef production in meat cattle breeding. 12. Organization of a forage base for meat cattle breeding. 13. The economy of beef production and management of farms for the breeding of beef cattle. 14. Technical support of the technological process of meat cattle breeding. **Themes of practical classes** 1. Lifetime estimation of meat productivity of cattle of specialized meat breeds. 2. Forecasting of the basic parameters of breeding cattle for meat and production of beef at the farm. 3. Post-butchering estimation of meat productivity of meat cattle breeds. 4. Fat stock of meat cattle and ways of its determination. 5. Types of constitution and exterior of beef cattle. 6. Methods of assessing the exterior of beef cattle. Identification and accounting in meat cattle breeding. 7. Bonitation of specialized meat cattle breeds. Bonitation of cows of specialized meat breeds (under conditions of production). 8. Linear-group selection in meat cattle breeding. Measures to intensify the reproduction of herds in meat cattle breeding. 9. Technological project of the production process at the projected commodity meat farm. 10. Planned production of beef at the projected commodity meat farm.

Language of teaching	11. Technological solution for the maintenance of meat cattle of the projected commodity meat farm. 12. Intensive and grazing stock of the herd. Calculation of the annual requirement for meat cattle at the projected farm. 13. Efficiency of production at the projected farm. Principles of management at farms engaged in breeding of meat cattle. 14. Writing of a resume to the business plan of the projected commodity meat farm. Features of meat cattle breeding in areas contaminated with products of radioactive decay. Ukrainian, English

Name of the discipline	**The technology of production of product of small cattle**
Lecturer	Pirova Liudmyla Viktorivna Candidate of Agricultural Sciences, Associate Professor of the Department of Technology of Milk and Meat Production
Year of study, semester	3 course, 1 semester
Faculties where the students are offered to study the discipline	The Faculty of Biology and Technology
List of competencies and learning outcomes provided by the discipline	The result of learning of the discipline is the acquisition of such knowledge and skills by students: *Knowledge* - significance, condition and development of the sheep breeding and goat breeding industry at the present stage in the conditions of market relations; - features of exteriors and biological features of sheep and goats; - herding reproduction technology; - cultivation of young animals of various purposes; - types of products obtained in the conduct of the industry of sheep and goat production; - classification of rocks and their features; - features of breeding work in sheep and goat breeding; - features of introducing promising technologies for the maintenance and use of sheep and goats in farms with different forms of property and conditions of feeding and maintenance; *Skills* - to determine the types of constitution of sheep and goats, defects and defects of the exterior; - to record documents of zootechnical and pedigree accounting; - to develop a plan for growing young animals; - to calculate herd turnover and livestock movement for farms engaged in raising sheep and goats and receiving products from them; - to carry out appraisal of sheep and goats of different directions of productivity and to determine their class; - to evaluate the wool, meat and dairy productivity; - to plan and effectively control production and reproduction processes in order to ensure highly qualified management of the sheep and goat industry.
Description of the discipline	

Prerequisites needed for studing the discipline	No
Students' limit in a group	25 students
Topics of in-class activity	**Topics of lectures** 1. The economic importance of sheep and goat production, the state and development prospects. 2. Origin, Domestication, and Domestic Changes of Sheep and Goats 3. Classification and basic breeds of sheep. 4. Classification and basic breeds of goats. 5. Wool productivity of sheep. 6. Wool and downy performance of goats. 7. The sheepskin productivity 8. Meat productivity of sheep and goats. 9. Dairy productivity of sheep and goats. Milking technology of sheep and goats. 10. Tribal work in sheep breeding and goat breeding 11. Bonification of sheep and goats. 12. The technology of reproduction of a herd of sheep and goats 13. The technology of feeding sheep and goats 14. Technology of maintenance and care of a herd of sheep and goats 15. Prospects for the production technology of goat production. Industrial goat breeding abroad 16. Modern systems of sheep breeding. Sheep economy in modern conditions of national and world market. **Themes of practical classes** 1. Evaluation of the exterior of sheep and goats of different directions of productivity 2. Characteristics of sheep of various production areas 3. Characteristics of the main breeds of goats 4. Wool productivity of sheep 5. Sheep Shearing. Wool classification 6. Meat productivity of sheep and goats 7. Milk productivity of sheep and goats 8. Commodity evaluation of sheepskin 9. Identification and breeding registration in sheep and goat breeding 10. Designing the production of wool and lamb gain in live weight and manure output 11. Calculation of the need for feed, water and litter, energy consumption for sheep during the year. 12. Calculation of the number of pastures for the sheep farm

	13. Designing the required number of premises, feed sites, machines, equipment and labor for servicing sheep throughout the year. 14. Calculation of the need and receipt of feed for feeding dairy herds of goats stall period 15. Designing the necessary number of premises, feeding grounds, machinery, equipment and manpower for the maintenance of goats during the year. 16. The study of intensive production technology of goat products.
Language of teaching	Ukrainian, English

Department of safety and quality of food, raw materials and technological processes

Name of the discipline	**Food expertise**
Lecturer	Sergii Sliusarenko The candidate of veterinary sciences, Assistant of the department of safety and quality of food, raw materials and technological processes
Year of study, semester	4th year, 2st semester
Faculties where the students are offered to study the discipline	Bio-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledge* - composition, structure, properties and use of materials, as well as methods for their chemical and thermal treatment; - legislative and regulatory acts, methodological materials on standardization, certification, metrology and quality management; - methods and means of controlling the physical parameters that determine the quality of products, the rules for conducting research and product acceptance. *Skills:* - apply certified methods of measurement, research and control; - analyze data on product quality and determine the causes of marriage; - possess the skills of registration of the research results and make appropriate decisions.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Introduction. 2. Examination of raw milk and dairy products 3. Examination of whole milk products and butter 4. Examination of canned milk. Cheese examination. 5. Examination of raw meat 6. Examination of meat semi-finished products, sausages and canned meat 7. Examination of fish and non-fish aquatic objects.

	8. Examination of fish products 9. Examination of low-quality, hazardous raw materials and food 10. Examination of water and juices. 11. Examination of tea, coffee, cocoa 12. Examination of plant products 13. Examination of food additives **Topics of practical classes:** 1. Sample preparation of various types of products for analysis 2. Methods of examination of quality indicators of milk. 3. Methods of examination of quality indicators of fermented milk products. 4. Methods of examination of oil quality indicators 5. Methods of examination of quality indicators of cheese. 6. Methods of examination of meat quality indicators. 7. Methods of examination of quality indicators of semi-finished meat 8. Methods of examination of quality indicators of sausages 9. Methods of examination of quality indicators of canned meat 10. Methods of examination of raw fish quality indicators 11. Methods of examination of qualitative indicators of non-fish water objects. 12. Methods of examination of quality indicators of fish products. 13. Methods of examination of quality indicators of poor-quality, hazardous raw materials and food 14. Methods of examination of water quality indicators 15. Methods of examination of quality indicators of juices 16. Methods of examination of quality indicators of tea, coffee, cocoa 17. Methods of examination of quality indicators of vegetable oils 18. Examination of food additives
Language of teaching	Ukrainian, English

Name of the discipline	**Sanitation and food hygiene with basics HACCP**
Lecturer	Sergii Sliusarenko Candidate of veterinary sciences, Assistant of the department of safety and quality of food, raw materials and technological processes
Year of study, semester	4th year, 1st semester
Faculties where the students	Bio-technological

are offered to study the discipline	
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledge* - organization of sanitary supervision of industries; - sanitary-hygienic requirements to the environmental factors; - the placement, layout and content production; - basics of sanitary management for the rational organization of technological process; preventive measures the occurrence of food poisoning and infectious diseases; - the observance of sanitation and personal hygiene for maintaining the health of the workers production; - observance of sanitary norms in determining the quality of food raw materials and food products. *Skills:* - observe sanitary norms in determining the quality of food raw materials and products; - to adhere to the basic hygienic principles of production; - to develop skills in working with special lterature sanitation and hygiene. - use of standard documentation for different types of raw materials and finished products in production; - to independently update and expand knowledge, improve skills, skills acquired in professional activity of the bachelor.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. The subject and objectives of sanitation and hygiene in food production 2. Hygiene of air, water of food companies 3. Noise, vibration and ventilation 4. Sanitation and hygiene of meat processing enterprises 5. Processing conditionally usable meat 6. Processing by-products and the production of digestive brands 7. Hygiene production of food of fat, preparations and processing of blood 8. Sanitary-hygienic requirements for storage of meat and meat products 9. Hygiene of sausage production and semi-finished products 10. Hygiene of production of canned meat

	11. Technical processing of animal raw materials and the production of fodder and technical products. 12. Hygiene of poultry processing 13. Hygiene the production of dairy products 14. Hygiene the production of starter cultures **Topics of practical classes:** 1. Sanitary-microbiological study of air 2. Sanitary-bacteriological examination of water 3. Sanitary-hygienic requirements for noise, vibration and ventilation systems in food factories 4. Processing conditionally usable meat 5. Processing by-products and the production of digestive brands 6. Hygiene production of food of fat, preparations and processing of blood 7. Sanitary-hygienic requirements for storage of meat and meat products 8. Hygiene of sausage production and semi-finished products 9. Hygiene of production of canned meat 10. Technical processing of animal raw materials and the production of fodder and technical products. 11. Hygiene of poultry processing, eggs 12. Hygiene of processing rabbits 13. Hygiene the production of dairy products 14. Hygiene the production of starter cultures
Language of teaching	Ukrainian, English

Name of the discipline	**Technology of storage and canning of food products**
Lecturer	Kachan Anatoliy candidate of agricultural sciences (PhD)
Year of study, semester	3d, 1 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* -Software and data processing methods for storing food products, preserving raw materials by various methods; - Current state and prospects of development of the canning industry in Ukraine and abroad; - Basic requirements for quality and preservation of food products; - What changes have occurred with the products in the process of their storage or during processing with high or low

	temperatures; - Qualitative composition of different groups of food products; - Basic innovative methods and scientific developments in the field of storage and preservation of products; - The main directions of improvement of relations between production and processing enterprises, modernization of material and technical base. *Skills:* -Apply basic methods of laboratory research of quality and technological properties of food products, food raw materials; -Determine the quality of raw materials and food products using modern methods and techniques; -Prevention of malignant diseases and prevent them from occurring; - Determine the mass fraction of individual substances in raw materials and food products; - Maintain the main ways of preserving food products, taking into account best practices in this field; - Assess the safety of raw materials and food and food products using standards and requirements; - Present the results of their own theoretical and practical research on the technology of storage and preservation of food products.
Discipline description	
Prerequisites needed for studying the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics** 1. Fundamentals of food safety and quality management. 2. Quality control and safety of drinking milk and cream. 3. Control of production of dairy products. 4. Control of production processes and quality of pig slaughter and sausage products. 5.Control of the quality and process of production of canned meat. 6. Quality control of eggs. 7. Honey quality control. **Topics of practical classes** 1 General characteristics of the modes and ways of storage of grain masses 2. Technology of storage and processing of oilseeds and technical crops 3 The technology of storage of potatoes and fruit products.

	4 Description of the processes of canning fruit. 5 Microbiological methods of canning vegetables 6 The technology of production of dried fruits and vegetables 7 Characteristics of the process of freezing fruits and berries. 8 The technology of storage of raw meat. 9 Technology of primary processing and storage of milk 10 The technology of storage of eggs of poultry. 11 The Main technological processes of production of canned meat 12 Technology of condensed and dry canned milk. 13 Technology of primary processing and preservation of raw hides. 14 Features of storage of feed products.
Language of teaching	Ukrainian, English
Name of the discipline	Technology of storage and canning of food products
Lecturer	Kachan Anatoliy candidate of agricultural sciences (PhD)
Year of study, semester	3d, 1 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	Learning outcomes Knowledges -Software and data processing methods for storing food products, preserving raw materials by various methods; - Current state and prospects of development of the canning industry in Ukraine and abroad; - Basic requirements for quality and preservation of food products; - What changes have occurred with the products in the process of their storage or during processing with high or low temperatures; - Qualitative composition of different groups of food products; - Basic innovative methods and scientific developments in the field of storage and preservation of products; - The main directions of improvement of relations between production and processing enterprises, modernization of material and technical base. Skills:

	-Apply basic methods of laboratory research of quality and technological properties of food products, food raw materials; -Determine the quality of raw materials and food products using modern methods and techniques; -Prevention of malignant diseases and prevent them from occurring; - Determine the mass fraction of individual substances in raw materials and food products; - Maintain the main ways of preserving food products, taking into account best practices in this field; - Assess the safety of raw materials and food and food products using standards and requirements; - Present the results of their own theoretical and practical research on the technology of storage and preservation of food products.
Discipline description	
Prerequisites needed for studying the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics** 1. Fundamentals of food safety and quality management. 2. Quality control and safety of drinking milk and cream. 3. Control of production of dairy products. 4. Control of production processes and quality of pig slaughter and sausage products. 5.Control of the quality and process of production of canned meat. 6. Quality control of eggs. 7. Honey quality control. **Topics of practical classes** 1 General characteristics of the modes and ways of storage of grain masses 2. Technology of storage and processing of oilseeds and technical crops 3 The technology of storage of potatoes and fruit products. 4 Description of the processes of canning fruit. 5 Microbiological methods of canning vegetables 6 The technology of production of dried fruits and vegetables 7 Characteristics of the process of freezing fruits and berries. 8 The technology of storage of raw meat. 9 Technology of primary processing and storage of milk 10 The technology of storage of eggs of poultry. 11 The Main technological processes of production of canned meat

Language of teaching	12 Technology of condensed and dry canned milk. 13 Technology of primary processing and preservation of raw hides. 14 Features of storage of feed products. Ukrainian, English

Name of the discipline	**Food safety**
Lecturer	Kachan Anatoliy candidate of agricultural sciences (PhD)
Year of study, semester	3d, 1 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	*Knowledges* -Software tools and methods for processing data on human nutrition, individual and population health, food composition; - Directions and prospects of food industry development in Ukraine and abroad, peculiarities of nutrition in different areas of population, national cuisines; - Basic English terminology in human nutrition, food industry, environmental protection; - The main international and domestic normative documents concerning the safety of food products; - Qualitative composition of different groups of food products; - What changes are made to the components of food products as a result of heat treatment; - Basic approaches to the creation of artificial food, functional products. *Skills:* Apply basic methods of laboratory research of quality and technological properties of certain food products, food raw materials; - Identify falsifications of food products; - Determine the mass fraction of food ingredients; - Assess the state of food security in the country; - To prevent illnesses of the alimentary genes and prevent them; - Present the results of their own theoretical and practical

	research on nutrition issues.
Discipline description	
Prerequisites needed for studying the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics** 1 Normative-legal basis of food safety. 2 Toxic and hygienic characteristics of metallic contaminants. 3 Biological action of nitrates and nitrites on the human body. 4 Effects of pesticides on the human body and the environment. 5 Dioxins and dioxin-like compounds. 6 Antibiotics in foods. 7 Hormonal drugs. 8 Toxins of natural origin in food products. 9 Genetically Modified Food Sources. 10 Classification and general characteristics of nutritional supplements. 11 Technological additives. 12 Biologically active additives in human nutrition. 13 Modern packaging materials. 14 Social toxicants. **Topics of practical classes** 1 Methods determination of heavy metals in food products. 2 Determination of metallic poisons and arsenic. 3 the Definition of toxic substances, which are isolated by steam distillation. 4 Methods for determination of nitrates, nitrites and nitrosamines in food products. 5 a Rapid method for the determination of antibiotics in products of slaughter animals. 6 Research products of slaughter animals for the presence of antibiotics 7 Methods of analysis pagalohori carbohydrates (dioxins) in food products and environmental objects. 8 Methods of determination of mycotoxins. 9 Sampling of products to determine the total volume and specific radioactivity . 10 Determination of the specific activity of food products with a radiometer SRP-68-01. 11 Express the methods of determining the concentration of radioactive substances in milk.

Language of teaching	12 Accelerated methods for determining the quality of honey. 13 Determination of water toxicity. 14Визначення toxicity of meat and other animal products. Ukrainian, English

Name of the discipline	**Quality control of livestock products**
Lecturer	Nadtochii Valentyna Nikolaevna candidate of agricultural sciences (PhD)
Year of study, semester	4d, 8 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - the main tasks and functions of quality control of livestock products; - the main international and domestic normative documents concerning the safety of food products; - methods and schemes of technological control of food production in accordance with the normative-technical documentation; - qualitative composition of different groups of food products; - basic methods of laboratory research of quality and technological properties of food raw materials and food products; - methods of detecting falsifications of food products. *Skills:* - to possess modern methods of determining the mass fraction of food ingredients; - to detect falsification of food products; - to apply the basic methods of laboratory researches of quality and technological properties of food products and food raw materials; - To keep records on researches of quality indices of food products; - prepare working solutions of reagents and use laboratory equipment; - carry out material calculations in the production of food products.

Discipline description	
Prerequisites needed for studying the discipline	No
Students' limit in a group	25
Topics of in-class activity	Lecture topics 1. Fundamentals of food safety and quality management. 2. Quality control and safety of drinking milk and cream. 3. Control of production of dairy products. 4. Control of production processes and quality of pig slaughter and sausage products. 5.Control of the quality and process of production of canned meat. 6. Quality control of eggs. 7. Honey quality control. Topics of practical classes 1. Organoleptic evaluation of milk-raw materials in accordance with DSTU 3662-2018. 2. Organoleptic study of drinking milk and cream. Laboratory methods for determining the quality of drinking milk and cream. 3. Organoleptic evaluation of sour-milk products. Laboratory methods for determining the quality of yogurt, sour cream and yogurt. 4. Organoleptic evaluation of cottage cheese cheese. Laboratory methods for determining the qualitative parameters of cheese dairy cheese. 5. Determination of the freshness of poultry meat. Organoleptic evaluation and chemical methods for determining the freshness of poultry meat. 6. Organoleptic quality assessment of sausage products. Laboratory methods for the study of sausage products. 7. Organoleptic study of canned meat. Laboratory methods for the study of canned meat. 8. Sampling eggs for determining their quality. External examination of eggs. Ovoscoping 9. Organoleptic study of egg components. Sanitary egg evaluation. 10. Methods of controlling the safety of eggs. 11. Organoleptic study of honey. 12. Laboratory methods for the study of honey. 13. Determination of falsification of honey.
Language of teaching	**Ukrainian, English**

Name of the discipline	Technological equipment of processing enterprises
Lecturer	Nadtochii Valentyna Nikolaevna candidate of agricultural sciences (PhD)
Year of study, semester	3d, 6 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - the bases of the theory of machines and machines of food production; - methods of calculating the basic parameters of machines and apparatus; - Principal schemes of the main types of technological equipment and accepted systems of their classification; - structure, features of operation of technological equipment, permissible load; - safety and industrial sanitation, environmental protection requirements for the operation of technological equipment. *Skills:* - To systematize and analyze the accumulated information on technological equipment of food industries using the latest tools; - to design technological equipment in technological lines; - Economically, rationally and safely exploit technological equipment; - to analyze the ways of development of constructions of new technological equipment; - to carry out technological, mechanical and operational calculations of technological equipment in the design of livestock production processing facilities; - to introduce highly effective, energy-saving technological equipment for the production of quality food products at meat processing enterprises, dairy and other raw materials; - Present results of development of own designs of machines and devices.
Discipline description	
Prerequisites needed for studying the discipline	No
Students' limit in a group	25

Topics of in-class activity	**Lecture topics** 1.General information about technological equipment of food production. Structure and classification of machines and apparatus. Theory of productivity. 2.Equipment for mechanical processing of milk and dairy products. 3.Equipment for heat treatment of milk and dairy products. 4. Mechanization of production of butter. 5. Technological lines and enterprises for processing and processing of meat. Machines and equipment for the slaughter of cattle, pigs and carcasses. 6.Machines for grinding meat and spit. 7. Technological equipment for mixing and forming. 8.Technological equipment for heat treatment of meat. **Topics of practical classes** 1. Functional scheme, structure and technological regulation of machines and devices for milk reception and storage. Pipelines and dairy fittings. 2. Structure and principle of centrifugal pumps and volumetric pumps for pumping milk and dairy products. 3. Functional circuits, structure and technological regulation of the homogenizer. 4. Structure, principle of operation and technological regulation of the separator. 5. The structure and technological regulation of the plate heat exchanger and the automated lamellar pasteurization and cooling plant. 6. The structure and principle of the machines and installations for mechanical removal of skins for primary processing of animals. Calculation of installations for mechanical removal of skins. 7. Study of structure and principle of operation of machinery for grinding meat and spitz: wolves and curtains. Calculation of basic parameters. 8. The structure and principle of the operation of slicers, syringes and automatic machines for the formation of sausages and sausages. Calculation of basic parameters.
Language of teaching	Ukrainian, English

Name of the discipline	**Technological equipment of food production**
Lecturer	Nadtochii Valentyna Nikolaevna candidate of agricultural sciences (PhD)
Year of study, semester	3d, 5, 6 semester
Faculties where the students are offered to study the discipline	Biologo-technological direction of preparation 181 "Food Technologies"
List of competencies and learning outcomes provided by the discipline	*Knowledges* - the bases of the theory of machines and machines of food production; - methods of calculating the basic parameters of machines and apparatus; - Principal schemes of the main types of technological equipment and accepted systems of their classification; - structure, features of operation of technological equipment, permissible load; - safety and industrial sanitation, environmental protection requirements for the operation of technological equipment. *Skills:* - To systematize and analyze the accumulated information on technological equipment of food industries using the latest tools; - to design technological equipment in technological lines; - Economically, rationally and safely exploit technological equipment; - to analyze the ways of development of constructions of new technological equipment; - to carry out technological, mechanical and operational calculations of technological equipment in the design of livestock production processing facilities; - to introduce highly effective, energy-saving technological equipment for the production of quality food products at meat processing enterprises, dairy and other raw materials; - Present results of development of own designs of machines and devices.
Discipline description	
Prerequisites needed for studying the discipline **Students' limit in a group** **Topics of in-class activity**	No 25 **Lecture topics** 1. General information about the technological equipment.

	Machines and apparatus. Productivity of machines and apparatuses. Basic technical and economic indicators of equipment. Classification of food production equipment. 2. Equipment for separating raw materials by grinding and rubbing. 3. Equipment for separating raw materials by a method of rubbing. Homogenization of food products. Emulsors and homogenizers, colloidal mills. 4. Equipment for the separation of plant and animal raw materials and semi-finished products. 5. Cutting mechanisms for fine and fine grinding. Purpose, structure and principle of work of spies, wolves and curtains. 6. Equipment for filtering food products. 7. Equipment for mechanical processing of raw materials and semi-finished compounds. 8. Equipment for mechanical processing of raw materials and semi-finished products. Classification of methods for the formation of food products and equipment for the formation of processes. Equipment for the formation of food products by pressing. 9. Equipment for the formation of food products by stamping. 10. Equipment for the formation of food products by extrusion. 11. Equipment for thermal processes. Fundamentals of the theory of heat transfer. 12. Technological equipment for carrying out of heat transfer processes for heating and cooling of food products. 13. Equipment for evaporation, condensation and crystallization of food products. 14. Methods of calculation of heat exchangers. 15. Technological processes of extraction. Requirements for extraction equipment. 16. Extractors of continuous action. Rotary settings. 17. Equipment for distillation and rectification. 18. Thermal and auxiliary equipment for distillation plants. 19. Equipment for conducting sorption processes. 20. The basics of the theory of drying. Classification and design of dryers. 21. The essence of the method of drying in a boiling layer and vibro boiling layer. 22. Equipment for drying liquid and paste-like products. 23. Equipment for hygrothermal and heat treatment of dough semi-finished products. 24. Structure, heating circuits and thermal regimes of modern baking ovens. 25. Equipment for the roasting of food products. 26. Equipment for conducting microbiological processes. Equipment for thermal and electrophysical processing of food

	raw materials and semi-finished products. Equipment for processing solutions of food products by membrane methods. 27. Equipment for conducting microbiological processes. Classification of equipment. Equipment for malt production. 28. Equipment for the production of alcohol. 29. Equipment for pasteurization and sterilization of food products. 30. Electrophysical methods of food processing. Electrocontact heating. Electroplasmolysis. Infrared pasteurization. Equipment for ultraviolet irradiation. **Topics of practical classes** 1. The structure of the working bodies for transportation of raw materials and semi-finished products, the principle of operation of the conveyors. Basic process calculations. 2. The device and principle of operation of hammer mills, jaw and cone crushers. Basic process calculations. 3. The structure and principle of work drum and of malcovich crushers, roller working bodies. Basic process calculations. 4. Structure and working principle emulsor, colloid mills and homogeneou. Basic process calculations. 5. Structure and working principle Spigots, gyroscopes and cuter. Basic process calculations. 6. Structure and working principle TRICORONA filtering centrifuges. The principle of operation of filtering centrifuges continuous action. Basic process calculations. 7. The device and principle of operation of the separator. Basic process calculations. 8. The device and principle of operation of the mixer with a planetary-screw mixer and paddle mixer. Basic process calculations. 9. Structure and working principle of rotary disk rotary press forming machine for sugar. The main parameters and their calculations. 10. The device and principle of operation of the extruder with shesternin and piston injection. The main parameters and their calculations. 11. The structure and principle of operation of single and multi-pass heaters. The calculation of the heat transfer surface. The equation of heat balance. 12. Structure and working principle of a plate heat exchanger, automated plate pasteurization and cooling installation. Basic process calculations. 13. Structures and working principle bahamacruise the evaporator unit. Basic process calculations. 14. The device and principle of operation of the vacuum apparatus is continuous, for boiling and crystallization of sugar outfall. Basic process calculations.

	15. The structure and operation of two tank extraction and installation of the extractor to soak the corn, battery extractors with step protivorechii him movement phases. The performance calculation. 16. The structure and principle of work of the extractor of column automated ECA-3 and extractor ND-1000. Performance calculation. 17. The structure and operation principle of the distillation column. Calculation of the diameter and height of the column. 18. The structure and principle of the refluxer of the rumen column and barrier regulator. 19. The structure and principle of the nozzle absorber and coal adsorber. Calculation of the absorption time of the substance and the equation of the material balance of adsorption. 20. Structure and principle of drum driers. 21. Construction and operation of vacuum dryer and multi-tile dryer. 22. Constructive scheme of a drying-cooling plant with a boiling layer. Constructive scheme of tray vibration dryer. 23. The structure and operating principle of the spray dryer. Design schemes for spray dryers. 24. The structure and principle of operation of a dead-end furnace with channel heating G4-HPP and electric furnace P-104. Performance calculation. 25. Structure and principle of operation of unmanaged steam-oil-fired stove and mechanized roasting oven M-8. 26. Structure and principle of vertical and horizontal autoclave operation. Calculation of the autoclave's performance and the number of required autoclaves. Heat calculation of autoclave. 27. Structure and principle of continuous rotor sterilizer. Calculation of continuous action sterilizers: Calculation of the number of cans, productivity and heat consumption. 28. The structure and principle of the single-drum electroplasmolizer and for the production of juice from the pulp. 29. The structure and principle of the automatic machine for production of sausage wares without shells. Calculation of infrared settings. 30. Structure and operation of the apparatus for sterilization of liquid food products by UV rays. Calculation of the bactericidal flow and the required amount of bactericidal tubes.
Language of teaching	Ukrainian, English

Name of the discipline	**The technology of slaughter products**
Lecturer	Vladimir Nedashkivskyi Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and Processes
Year of study, semester	4d, 1 semesters
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - rules for determining the control of fattening of slaughter animals and the production of carcases in accordance with the requirements of current state standards; - technology for the primary processing of livestock, pigs, poultry and rabbits for the slaughter of animals. *Skills:* - to ensure the proper preparation of animals for implementation; - determine the category of fattening animals; - organize their transportation and delivery to meat processing enterprises; - apply modern technologies of canning meat and meat products in the economy; - to determine the freshness and technological properties of meat as a raw material for consumption and processing.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. The role and importance of meat products in human nutrition. 2. Security and requirements for primary processing of cattle at meat processing plants 3. Technological scheme of processing of land and waterfowl and processing of rabbits 4. Safety and hygiene requirements for primary processing of pigs. 5. Safety and hygiene requirements for primary processing of

	sheep 6. The composition and properties of meat. 7. Commercial-quality evaluation of animal carcasses and their varietal cut 8. Marking of meat 9. The composition and nutritive value of byproducts. 10. Veterinary-sanitary conditions of processing animal fats. 11. Causes of spoilage of meat and meat products. 12. Preserving of meat and meat products. 13. The technology of processing endocrine and enzymatic and special raw materials 14. Sanitary-hygiene requirements for the processing of skins and fur raw materials. **Topics of practical classes:** 1. Safety and hygiene requirements for the transport of animals for slaughter and poultry. 2. Technological structure of the meat processing enterprises. 3. Definition of categories of fatness slaughtered animals in the living state. 4. The definition of fatness in meat quality. 5. The definition of the category of fatness according to the characteristics of carcasses of livestock and poultry and their branding. 6. Requirements for varietal rozrobka carcasses of slaughter animals and poultry in the production of packaged meat. 7. Morphological and chemical composition of cuts of different varieties. 8. Determination of species of meat. 9. Determining the freshness of meat. 10. Determination of species of meat on the anatomy. 11. Research methods the quality and safety of animal fats. 12. Processing, preserving and storage of raw intestines 13. Primary processing technology of edible offal 14. The production of meat and sausage products as a method of preservation. 15. Quality assessment of raw meat by organoleptic and laboratory methods. 16. Changes in meat during processing of smoke. Preserving of meat high temperature. 17. Drying and drying sublimazione - essence, methods, and evaluation of the quality of the resulting products. 18. Periods of storage of frozen meat and offal. 19. Technology of primary processing of blood: stabilization, debridement, the preservation of blood and its components. 20. Requirements to technology of primary processing of hides, bristles, hair, rogo-hoof raw materials, wool, feathers. 21. The technology of processing of waste materials into fodder

	flour
Language of teaching	Ukrainian, English

Name of the discipline	**Food Biotechnology**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	3d, 1-2 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* on the principles of designing protein producers and low molecular weight biologically active compounds the main groups of microorganisms and their biochemical activity; about morphological, physiological signs of microorganisms, their distribution in nature; microflora of food raw materials and determination of the possibility of contamination of food products by pathogenic microorganisms and ways of their penetration; description of the main technological processes using microorganisms for the manufacture of food products and prevention of food infections and poisonings; importance of microbiological processes in the production, processing and storage of food products; the influence of various environmental factors on microorganisms' livelihoods; the main representatives of pathogenic microorganisms and the basis for the prevention of foodborne illness; peculiarities of the microflora of the main groups of food products; technological schemes for obtaining various biotechnological products and how they are used. *Skills:* • To use the acquired knowledge about the main groups of microorganisms and their biochemical activity in practical activity • Apply the knowledge gained to regulate microorganisms' vitality to optimize food production • Use knowledge to justify the work of the employee in order to stimulate the desired microbiological processes and inhibition of

	undesirable • Conduct a comprehensive assessment of the main technological processes of food production from the position of microbiological expediency of production • Apply the knowledge gained on the basic principles of the environmental factors for regulating microorganisms and optimizing food production • Have skills in prevention of food poisoning and infections. • Apply methods for assessing the quality of food raw materials and finished products according to microbiological indicators for major food groups. To give an assessment of the analyzed sample in accordance with the requirements of the technological regime, or the state standard. Own methods of identifying specific microorganisms in raw materials and products. • Use state regulation of practice in the production and storage of food products in their professional activities.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Industrial Biotechnology 2. Biotechnology for the production of glucose 3. Biotechnologies of production of L-malic acid 4. Production of enzymes for milk processing technology 5. Use of biotechnological approaches in the production of yoghurts, yogurt and yogurt 6. Probiotics and prebiotics in milk processing technology 7. Application of immobilized enzymes in milk processing technology. 8. Recycling of milk sugar. 9. Bacterial fermentation for the production of cheese. 10. Use of biotechnological approaches in the production of cheeses. 11. Biotechnological approaches for determining the nutritional value and food toxicity. 12. Biotechnology in the meat industry. 13. Biotechnology of the preparation of dried meat. 14. Biotechnology of marinating meat with dairy products. 15. Biotechnological approaches and methods of determination of antibiotics in milk and products of its processing. 16. Biotechnological methods for the determination of antibiotics in meat and meat products.

	17. Biotechnological approaches for determining the nutritional value and food toxicity. 18. Biotechnology of baking production. 19. Biotechnology of brewing. 20. Biotechnology of winemaking. **Topics of practical classes:** 1. Production and use of food products through biotechnological approaches 2. Investigation of the influence of enzymes on milk sampling 3. Investigation of the action of native enzymes to change the acidity of milk 4. Investigation of the effect of immobilized enzymes on the change of the acidity of milk 5. Use of Tetrachymena piroformis to assess the quality of milk 6. Use of Tetrachymena pyroformis to assess the quality of meat 7. Investigation of the influence of biotechnological methods on meat quality 8. Biotechnological methods for the determination of antibiotics in milk, meat and products of their processing 9. Biotechnological approaches in cheese production 10. Biotechnological approaches during the production of yoghurts, plain thistle 11. Investigation of the influence of enzymes on the quality of milk products 12. Biotechnological approaches during the production of basturm, hamoon and others. 13. Enzyme preparations in baking. 14. The use of felted preparations in brewing. 15. Fermental preparations of microbial origin in winemaking.
Language of teaching	Ukrainian, English

Name of the discipline	**Food Biotechnology**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	3d, 1-2 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* on the principles of designing protein producers and low molecular weight biologically active compounds

	the main groups of microorganisms and their biochemical activity; about morphological, physiological signs of microorganisms, their distribution in nature; microflora of food raw materials and determination of the possibility of contamination of food products by pathogenic microorganisms and ways of their penetration; description of the main technological processes using microorganisms for the manufacture of food products and prevention of food infections and poisonings; importance of microbiological processes in the production, processing and storage of food products; the influence of various environmental factors on microorganisms' livelihoods; the main representatives of pathogenic microorganisms and the basis for the prevention of foodborne illness; peculiarities of the microflora of the main groups of food products; technological schemes for obtaining various biotechnological products and how they are used. *Skills:* • To use the acquired knowledge about the main groups of microorganisms and their biochemical activity in practical activity • Apply the knowledge gained to regulate microorganisms' vitality to optimize food production • Use knowledge to justify the work of the employee in order to stimulate the desired microbiological processes and inhibition of undesirable • Conduct a comprehensive assessment of the main technological processes of food production from the position of microbiological expediency of production • Apply the knowledge gained on the basic principles of the environmental factors for regulating microorganisms and optimizing food production • Have skills in prevention of food poisoning and infections. • Apply methods for assessing the quality of food raw materials and finished products according to microbiological indicators for major food groups. To give an assessment of the analyzed sample in accordance with the requirements of the technological regime, or the state standard. Own methods of identifying specific microorganisms in raw materials and products. • Use state regulation of practice in the production and storage of food products in their professional activities.
Discipline description	
Prerequisites needed for	

studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Industrial Biotechnology 2. Biotechnology for the production of glucose 3. Biotechnologies of production of L-malic acid 4. Production of enzymes for milk processing technology 5. Use of biotechnological approaches in the production of yoghurts, yogurt and yogurt 6. Probiotics and prebiotics in milk processing technology 7. Application of immobilized enzymes in milk processing technology. 8. Recycling of milk sugar. 9. Bacterial fermentation for the production of cheese. 10. Use of biotechnological approaches in the production of cheeses. 11. Biotechnological approaches for determining the nutritional value and food toxicity. 12. Biotechnology in the meat industry. 13. Biotechnology of the preparation of dried meat. 14. Biotechnology of marinating meat with dairy products. 15. Biotechnological approaches and methods of determination of antibiotics in milk and products of its processing. 16. Biotechnological methods for the determination of antibiotics in meat and meat products. 17. Biotechnological approaches for determining the nutritional value and food toxicity. 18. Biotechnology of baking production. 19. Biotechnology of brewing. 20. Biotechnology of winemaking. **Topics of practical classes:** 1. Production and use of food products through biotechnological approaches 2. Investigation of the influence of enzymes on milk sampling 3. Investigation of the action of native enzymes to change the acidity of milk 4. Investigation of the effect of immobilized enzymes on the change of the acidity of milk 5. Use of Tetrachymena piroformis to assess the quality of milk 6. Use of Tetrachymena pyroformis to assess the quality of meat 7. Investigation of the influence of biotechnological methods on meat quality 8. Biotechnological methods for the determination of antibiotics

	in milk, meat and products of their processing 9. Biotechnological approaches in cheese production 10. Biotechnological approaches during the production of yoghurts, plain thistle 11. Investigation of the influence of enzymes on the quality of milk products 12. Biotechnological approaches during the production of basturm, hamoon and others. 13. Enzyme preparations in baking. 14. The use of felted preparations in brewing. 15. Fermental preparations of microbial origin in winemaking.
Language of teaching	Ukrainian, English

Name of the discipline	**Techno-chemical control of food production**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	3d, 2 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - functions and tasks of techno-chemical control of production; - the procedure for the organization of techno-chemical control at the enterprises of the branch; - the main requirements of normative documents for the quality of raw materials and finished products; - technological schemes of production of the main types of products; - technological factors influencing product quality; - types of product shortages, causes of its occurrence and ways of warning; - methods of determining the quality indices of raw materials. products, semi-finished products and control of technological processes; - Periodicity of control and means of its implementation; - safety rules of work in the chemical laboratory; - structure, operating principle and conditions of operation of laboratory devices and devices. *Skills:* - methods of determining the quality indices of raw materials. products, semi-finished products and control of technological processes;

	- Periodicity of control and means of its implementation; - safety rules of work in the chemical laboratory; structure, operating principle and conditions of operation of laboratory devices and equipment. - work with the current in the field of NTD and approved research methods; - use of chemical utensils, tools, reagents, instruments and laboratory equipment; - to select the average samples of raw materials. materials, finished products and prepare them for research; - compare and evaluate the obtained research results, perform control-records-records.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Organization of technological and microbiological control in the dairy industry. Tasks and importance of the discipline for the training of industry professionals. 2. Organization of work of laboratory of technical control in the dairy industry. Equipment and modern devices for quality control of products. 3. Rules of preparation, storage and testing of reagents, checking the accuracy of the instrumentation. 4. Acceptance procedures, quality control of milk. 5. Scheme technical-chemical, microbiological, sanitary – hygienic, organoleptic control of the finished product. 6. Modern schemes of quality control ISO and security in the production of dairy products in the enterprise. 7. The foundations of the system HACCP, principles, key definitions and structure. 8. Determination of critical control points in the production of milk and dairy products. 9. The control of the modes of washing and disinfection of equipment. **Topics of practical classes:** 1. Holding the input of the safety of labour. 2. Learning the rules of the sampling and holding of technochemical control of pasteurized milk. 3. Technochrono control in the production of cheese 4. Technochrono control in the manufacture of sour cream.

	5. Technochrono control the production of oil. 6. Technochrono production control spreads. 7. The requirements of normative-technical documentation for oil. 8. The requirements of normative-technical documentation in soft cheeses. 9. Technochrono control cheese. 10. Technochrono control of cooked sausages. 11. Technochrono control smoked sausages. 12. Technochrono control of smoked meat. 13. Technochrono control of dried meat. 14. Technochrono control roasted meat.
Language of teaching	Ukrainian, English

Name of the discipline	**Technology of recycling of secondary raw materials**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	5d, 2 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - Theoretical and practical bases for the formation and use of secondary products; - to develop technological schemes for recycling of secondary products; - the ability to apply a systematic approach, knowledge of modern technologies and methods in designing; - the ability to demonstrate knowledge and understanding of the formation and application of mathematical principles and methods; - the ability to propose and substantiate measures to improve the efficiency of recycling technology of secondary raw materials; - the influence of secondary raw materials on the environment. *Skills:* - apply the methods of determination of chemical composition and properties of secondary resources and products obtained from them; optimizing the use of existing technological solutions, processing of secondary material resources; - justify proposals for the introduction of modern equipment to

	improve technology, improve the quality of food, conditions of storage and sale; - to develop and introduce technical and technological activities on the basis of the principles of resource and energy saving; - knowledge and understanding of special engineering, economic and environmental aspects, at the level necessary to achieve the results OSTO program, including taking into account the latest achievements of science and technology; - ability to analyze, apply and create sophisticated engineering technologies, processes, systems and equipment, select, analyze, and develop suitable analytical model, numerical and experimental methods, to analyze the results of such research; - ability to use advanced achievements in the design of objects: - understanding and experience in applying methods of design and research; - ability to learn independently throughout life, taking into account previously acquired experience; - the ability to track the development of science and technology and apply current knowledge.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Tasks and meanings of the discipline for the training of specialists in the field. 2. Socio-economic importance of using progressive resource-saving technologies in the food industry 3. Nomenclature and classification of secondary material food industry resources 4. Chemical composition of vegetable and fruit raw materials and the value of individual substances for its storage and processing 5. Secondary raw materials and veterinary sanitary requirements for its collection and processing at meat processing enterprises 6. Blood. collection and processing of blood 7. Methods of processing bones in meat processing enterprises of different capacities 8. Raw Fat: harvesting, processing and grinding 9. Endocrine-enzymatic and special raw materials 10. Collagen - keratin-containing raw materials 11. Rational use of secondary raw materials of poultry processing

	12. Production of feed products for agricultural and non-productive animals (cats and dogs) 13. Directions of rational use and processing of non-food raw materials (manure and litter) **Topics of practical classes:** 1. Conducting an entrance instruction on occupational safety. 2. Veterinary and sanitary requirements for the collection, transportation of animals and waste of raw material of animal origin 3. Primary treatment of blood (stabilization, defibrillation, separation, discoloration, canning, thermal and chemical coagulation). Products obtained by the processing of blood 4. Technological process of complex bone processing on domestic and foreign lines. Production of glue and gelatin. 5. Ways of processing of fat-raw 6. Waste and waste products of meat processing enterprises and their rational use. Production of technical fat from fat deposits of industrial effluents. The technology of obtaining a commercial soap 7. Basic processes of production of organopreparations. Types of organoleptics from animal raw materials and their characteristics 8. Technology of processing horned-hoofed raw material, hair and bristles. Production of corn flour. Technology of keratin glue. The technology of complex production of natural amino acids. Production of keratin hydrolyzate. 9. Technology of obtaining of the powder of flour. Use of hydrolyzed pen and chicken oil in industry. Technology of Chicken Pepsin, Hyaluronic Acid. Rational methods of processing egg shell. 10. Use of secondary raw materials for the production of feed for carnivorous unproductive (domestic) animals. 11. Rational utilization of waste: composting, vermiculture, fishing-biological rates .; pudret, vestlage and novasazh.
Language of teaching	Ukrainian, English

Name of the discipline	**Technology of recycling of secondary raw materials**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	5d, 2 semester
Faculties where the students are offered to study the	Biologo-technological

discipline	
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - Theoretical and practical bases for the formation and use of secondary products; - to develop technological schemes for recycling of secondary products; - the ability to apply a systematic approach, knowledge of modern technologies and methods in designing; - the ability to demonstrate knowledge and understanding of the formation and application of mathematical principles and methods; - the ability to propose and substantiate measures to improve the efficiency of recycling technology of secondary raw materials; - the influence of secondary raw materials on the environment. *Skills:* - apply the methods of determination of chemical composition and properties of secondary resources and products obtained from them; optimizing the use of existing technological solutions, processing of secondary material resources; - justify proposals for the introduction of modern equipment to improve technology, improve the quality of food, conditions of storage and sale; - to develop and introduce technical and technological activities on the basis of the principles of resource and energy saving; - knowledge and understanding of special engineering, economic and environmental aspects, at the level necessary to achieve the results OSTO program, including taking into account the latest achievements of science and technology; - ability to analyze, apply and create sophisticated engineering technologies, processes, systems and equipment, select, analyze, and develop suitable analytical model, numerical and experimental methods, to analyze the results of such research; - ability to use advanced achievements in the design of objects: - understanding and experience in applying methods of design and research; - ability to learn independently throughout life, taking into account previously acquired experience; - the ability to track the development of science and technology and apply current knowledge.
Discipline description	
Prerequisites needed for studing the discipline	No

Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Tasks and meanings of the discipline for the training of specialists in the field. 2. Socio-economic importance of using progressive resource-saving technologies in the food industry 3. Nomenclature and classification of secondary material food industry resources 4. Chemical composition of vegetable and fruit raw materials and the value of individual substances for its storage and processing 5. Secondary raw materials and veterinary sanitary requirements for its collection and processing at meat processing enterprises 6. Blood. collection and processing of blood 7. Methods of processing bones in meat processing enterprises of different capacities 8. Raw Fat: harvesting, processing and grinding 9. Endocrine-enzymatic and special raw materials 10. Collagen - keratin-containing raw materials 11. Rational use of secondary raw materials of poultry processing 12. Production of feed products for agricultural and non-productive animals (cats and dogs) 13. Directions of rational use and processing of non-food raw materials (manure and litter) **Topics of practical classes:** 1. Conducting an entrance instruction on occupational safety. 2. Veterinary and sanitary requirements for the collection, transportation of animals and waste of raw material of animal origin 3. Primary treatment of blood (stabilization, defibrillation, separation, discoloration, canning, thermal and chemical coagulation). Products obtained by the processing of blood 4. Technological process of complex bone processing on domestic and foreign lines. Production of glue and gelatin. 5. Ways of processing of fat-raw 6. Waste and waste products of meat processing enterprises and their rational use. Production of technical fat from fat deposits of industrial effluents. The technology of obtaining a commercial soap 7. Basic processes of production of organopreparations. Types of organoleptics from animal raw materials and their characteristics 8. Technology of processing horned-hoofed raw material, hair and bristles. Production of corn flour. Technology of keratin

	glue. The technology of complex production of natural amino acids. Production of keratin hydrolyzate. 9. Technology of obtaining of the powder of flour. Use of hydrolyzed pen and chicken oil in industry. Technology of Chicken Pepsin, Hyaluronic Acid. Rational methods of processing egg shell. 10. Use of secondary raw materials for the production of feed for carnivorous unproductive (domestic) animals. 11. Rational utilization of waste: composting, vermiculture, fishing-biological rates .; pudret, vestlage and novasazh.
Language of teaching	Ukrainian, English

Name of the discipline	**Livestock wastes and their processing**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	5d, 2 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - the ability to provide a general technological characterization and hygienic assessment of systems for the removal, treatment, transportation, processing and utilization of livestock wastes for different systems of feeding and keeping of farm animals and poultry; - ability to perform calculations of technological parameters of waste recycling systems; - Ability to organize and carry out research on the study of the physical and mechanical properties and chemical composition of waste farms and complexes for the keeping of farm animals and poultry; - planning and conducting research on optimization of livestock waste management systems and facilities. *Skills:* - to give technological characteristic and hygienic assessment of the various systems, removal, handling, transportation, processing and disposal of waste for different systems of feeding and housing of farm animals and poultry; - to give the description of technological schemes of preparation for use of manure of pig, cattle and poultry breeding enterprises;

	- in the design of removal systems, installations for the processing of manure and slurry, to be able to make a choice and substantiation of technological schemes; - to make estimates of output volumes of manure and manure effluents. - to make calculations of the parameters of the sharing systems and the efficiency of their work; - doing calculations ologopolistic materials for composting manure; - calculate the basic technological parameters of bioreactors; - to plan and carry out scientific researches on problems of optimization of existing and creation of new systems for processing animal waste.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. The essence, meaning and meaning of the subject. 2. Fallow, remnants of processing enterprises. 3. Gnoy biomass, urine. 4. Methods of disposal. 5. Methanogenesis, vermiculturing. 6. Chemical and physical methods of utilization. 7. Use of pumice biomass. 8. Use of meat, meat-bone, bone, feathers, blood and fish meal. 9. Application of biohumus, biomass of single-celled algae, biogas. **Topics of practical classes:** 1. Ecological approaches to the utilization of animal waste. 2. Veterinary and sanitary approaches to the utilization of livestock wastes 3. Characteristics of the remnants of processing enterprises. 4. Comparative evaluation of poultry biomass of cattle, pigs and poultry. 5. Biothermic pits, arthropods 6. Biogas plants. Calculation of capacities of BSU. 7. Designing of farms 8. Chemical and enzymatic hydrolysis of livestock wastes, heat generators. 9. Production of meat, meat-bone, bone, feathers, blood and fish meal.

	10. Norms of introducing organic fertilizers and soil fertility. 11. Characteristics of meat, meat-bone, feathers, blood and fish meal. 12. Work of gas generators, heat generators, electric generators on fuel obtained from animal waste.
Language of teaching	Ukrainian, English

Name of the discipline	**Biotechnology of meat and dairy products**
Lecturer	Halyna Merzlova Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and technological processes
Year of study, semester	4d, 1-2 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* □ on the principles of designing protein producers and low molecular weight biologically active compounds □ the main groups of microorganisms and their biochemical activity; □ about morphological, physiological signs of microorganisms, their distribution in nature; □ microflora of food raw materials and determination of the possibility of contamination of food products by pathogenic microorganisms and ways of their penetration; □ description of the main technological processes using microorganisms for the manufacture of food products and prevention of food infections and poisonings; □ importance of microbiological processes in the production, processing and storage of food products; □ the influence of various environmental factors on microorganisms' livelihoods; □ the main representatives of pathogenic microorganisms and the basis for the prevention of foodborne illness; □ peculiarities of the microflora of the main groups of food products; □ technological schemes for obtaining various biotechnological products and how they are used. *Skills:* • To use the acquired knowledge about the main groups of microorganisms and their biochemical activity in practical activity

	• Apply the knowledge gained to regulate microorganisms' vitality to optimize food production • Use knowledge to justify the work of the employee in order to stimulate the desired microbiological processes and inhibition of undesirable • Conduct a comprehensive assessment of the main technological processes of food production from the position of microbiological expediency of production • Apply the knowledge gained on the basic principles of the environmental factors for regulating microorganisms and optimizing food production • Have skills in prevention of food poisoning and infections. • Apply methods for assessing the quality of food raw materials and finished products according to microbiological indicators for major food groups. To give an assessment of the analyzed sample in accordance with the requirements of the technological regime, or the state standard. Own methods of identifying specific microorganisms in raw materials and products. • Use state regulation of practice in the production and storage of food products in their professional activities.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Industrial Biotechnology 2. Biotechnology for the production of glucose 3. Biotechnologies of production of L-malic acid 4. Production of enzymes for milk processing technology 5. Use of biotechnological approaches in the production of yoghurts, yogurt and yogurt 6. Probiotics and prebiotics in milk processing technology 7. Application of immobilized enzymes in milk processing technology. 8. Recycling of milk sugar. 9. Bacterial fermentation for the production of cheese. 10. Use of biotechnological approaches in the production of cheeses. 11. Biotechnological approaches for determining the nutritional value and food toxicity. 12. Biotechnology in the meat industry. 13. Biotechnology of the preparation of dried meat. 14. Biotechnology of marinating meat with dairy products.

	15. Biotechnological approaches and methods of determination of antibiotics in milk and products of its processing. 16. Biotechnological methods for the determination of antibiotics in meat and meat products. 17. Biotechnological approaches for determining the nutritional value and food toxicity. **Topics of practical classes** 1. Obtain and use food products through biotechnological approaches 2. Study of the effect of enzymes on the coagulation of milk 3. Studies on the action of the native enzyme on the change of acidity of milk 4. Studies on the action of immobilized enzymes on the change of acidity of milk 5. Use Tetrahymena performs to assess the quality of milk 6. Use Tetrahymena performs to assess the quality of the meat 7. A study of the influence of biotechnological methods on meat quality 8. Biotechnological methods for the determination of antibiotics in milk, meat and their products 9. Biotechnological approaches during the production of cheese 10. Biotechnological approaches in the production of yogurts, prostokvasha 11. Study the effect of enzymes on the quality of products of milk processing 12. Biotechnological approaches in the production of pastrami, ham, etc.
Language of teaching	Ukrainian, English

Name of the discipline	**Safety of animal slaughter products**
Lecturer	Vladimir Nedashkivskyi Candidate of Agricultural Sciences, Associate Professor of the Department of Safety and Quality of Food, Raw Materials and Processes
Year of study, semester	3d, 1 semester
Faculties where the students are offered to study the discipline	Biologo-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - rules for determining the control of fattening of slaughter animals and the production of carcases in accordance with the requirements of current state standards;

	- technology for the primary processing of livestock, pigs, poultry and rabbits for the slaughter of animals. *Skills:* - to ensure the proper preparation of animals for implementation; - determine the category of fattening animals; - organize their transportation and delivery to meat processing enterprises; - apply modern technologies of canning meat and meat products in the economy; - to determine the freshness and technological properties of meat as a raw material for consumption and processing.
Discipline description	
Prerequisites needed for studing the discipline	No
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Security and requirements for primary processing of cattle and pigs at meat processing plants 2. Technological scheme of processing of land and waterfowl and processing of rabbits 3. The composition and properties of meat. 4. Commercial-quality evaluation of animal carcasses and their varietal cut 5. The composition and nutritive value of byproducts. 6. Preserving of meat and meat products. 7.The technology of processing endocrine and enzymatic and special raw materials **Topics of practical classes** 1. Safety and hygiene requirements for the transport of animals for slaughter and poultry. 2. Technological structure of the meat processing enterprises. 3. Definition of categories of fatness slaughtered animals in the living state. 4. The definition of fatness in meat quality. 5. The definition of the category of fatness according to the characteristics of carcasses of livestock and poultry and their branding. 6. Requirements for varietal rozrobka carcasses of slaughter animals and poultry in the production of packaged meat. 7. Morphological and chemical composition of cuts of different

	varieties. 8. Determination of species of meat 9. Methods for determining the freshness of meat. The selection of average samples. Organoleptic evaluation of freshness of meat. 10. Processing, preserving and storage of raw intestines. 11. Research methods the quality and safety of animal fats. 12. Technology of primary processing of blood: stabilization, debridement, the preservation of blood and its components. 13. Requirements to technology of primary processing of hides, bristles, hair, rogo-hoof raw materials, wool, feathers. 14. The technology of processing of waste materials into fodder flour
Language of teaching	Ukrainian, English

Annotation of discipline of choice

Name of the discipline	**Food chemistry**
Lecturer	Natalia Nedashkivskaya Candidate of Agricultural Sciences, Assistant Professor of Safety and Quality of Food, Raw Materials and Processes
Year of study, semester	2d, 1 semester
Faculties where the students are offered to study the discipline	Ecological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledges* - structure, properties, biological significance of macronutrients and micronutrients; - exchange of proteins, carbohydrates, lipids in the human body; - peculiarities of chemical transformations of proteins, carbohydrates, lipids, mineral elements occurring during storage and use of foodstuffs *Skills:* - It is competent and safe to use foodstuffs that meet the requirements of nutrition science; - To quickly identify and hinder the factors contributing to the spoilage of raw materials and materials during processing and storage; - have the skills of systematic analysis of the quality of raw materials and products in order to predict changes in the complex of properties in the process of processing, storage and

	preparation of products with the corresponding properties; - to draw conclusions about the safety of the food object being investigated; - to investigate the influence of various factors on denaturation of proteins; - to determine qualitative reactions content in raw materials and food nutrients; - to investigate the influence of conditions and the term of storage of fats on their chemical constants; - to detect carbohydrates in the studied samples; - Perform qualitative and quantitative analysis of vitamins
Discipline description	
Prerequisites needed for studing the discipline	None
Students' limit in a group	25
Topics of in-class activity	**Lecture topics:** 1. Introductory lecture. Proteins, structure, properties, transformation in food processes 2. Carbohydrates. Structure, properties, transformation in food technologies 3. Lipids. Structure, properties, their transformation in food technologies 4. The role of vitamins in human nutrition and the problem of providing them with the body. 5. Mineral substances. 6. Nutritional acids. 7. Nutritional supplements. **Topics of practical classes:** 1. Methods of determination of protein in foods 2. Methods of determining the mass fraction of carbohydrates in foods 3. Methods of determination of lipids in food products 4. Methods of determination of vitamins in food products and raw materials 5. Methods of determination of mineral substances. in food products 6. Methods for determining dietary supplements. 7. Food safety.
Language of teaching	Ukrainian, English

Department of Food Technologies and Technologies of Animal Production Processing

Title of discipline	The General Technology of Food Products
Teacher	Sergiy Narizhnyy PhD of Technical Sciences Assistant Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	3d, 1 and 2 semesters
Faculties where the students are offered to study the discipline	Biological-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledge* - basic technical and technological terms, the notion and definitions used in the food industry, types of products, composition and properties of raw materials, requirements for the quality of raw materials, vegetable, chemical ingredients and additives; - the essence of biochemical, physicochemical and microbiological aspects of technological processes of food production, changes occurring in raw materials under the influence of technological factors; - scientific and theoretical foundations of technological processes, principles of organization of technological flows of raw materials processing, manufacturing of food products of diverse purposes, methods of storage, preservation and processing of food raw materials; - optimal technological processes and modes of processing of food raw materials both in terms of energy and resource saving, and preservation of biologically active and other substances, and in some technologies and their accumulation (wine, cheese, beer, additives, etc.); - the bases of intensification of technological processes of processing of food products, development of rational recipes; - modern technologies of the food industry, classification, composition and properties of food raw materials, requirements for its quality, classification of food production, principles of food technologies, basic methods of mechanical and thermal processing of raw materials, purpose and principle of the main equipment operation, general technological schemes production of the main types of products and products from secondary raw materials; - methods of processing raw materials into food products for the purpose of choosing and practical application of the most effective in terms of quality and cost-effectiveness;

	- modern methods of processing of food raw materials on the basis of mechanization and automation of technological processes, with economic expediency of using different technologies and equipment; - principles of construction of technological schemes and hardware design of technological processes, the appointment of main equipment and the principle of its operation; - generalized scientific and technical foundations of specific technological processes, a scientific approach to the improvement and intensification of technological processes in the decision of issues of optimization of production of high quality products and utilization of waste; - the procedure for conducting quality control and requirements of standards for raw materials and finished products; - procedure for accounting of raw materials and finished products; - ways to utilize waste and secondary raw materials of the main production, ways of reducing and eliminating harmful industrial emissions and water waste. ***Skills:*** - to give a feasibility study of various technological measures, to substantiate the selection of equipment for the effective implementation of a particular technological process, to apply scientifically based, effective, energy-saving technologies of production of various types of food products; - it is grounded to choose assortment, modern technological schemes, parameters of raw materials processing and food products, hardware design of technological processes; - rational use of primary and secondary raw materials and materials; - to use modern methods of management, control of technological operations, to determine the main characteristics of raw materials, finished products; - use regulatory documents for the production of food products, the equipment and technological schemes navigation; - to analyze the technological situation and the level of environmental safety of production.
Discipline description	
Preconditions necessary for the study of discipline	Compulsory academic discipline "The General Technology of Food Products" is based on the knowledge of such disciplines as Chemistry, Biochemistry, Higher Mathematics, Introduction to the specialty and Sensory analysis of food products studied at the 1st year, and «Theoretical Foundations of Food Production Technologies», «Food chemistry», «Technical microbiology», «Technology of receipt and quality control of raw materials of processing industry», «Standardization, certification and metrology», studied on the 2 nd course.

Maximum number of students who can study simultaneously	25
Topics of classroom lessons	**Lecture topics:** 1. Introductory lecture 2. Technological systems and processes of food production 3. Technology of grain storage 4. Flour technology 5. Technology of cereals 6. Technology of bread and pasta 7. Confectionery technology 8. Technology of starch and starch molasses 9. Sugar technology 10. Oil and fat technology 11. Dairy technology 12. Technology of meat products 13. Tin cans technology 14. Technology of fish products 15. Technology of Vodka and Alcoholic Beverages 16. Beer technology 17. Technology of juices and wine 18. Technology of pectin and pectin products **Topics of practical classes:** 1. Standardization of food products. Study methods for assessing the quality of food products 2. Grain quality of cereals and cereals study 3. Assortment and evaluation of flour quality study 4. Assortment and quality estimation of groats study 5. Evaluating the quality of bread and bakery products 6. Assortment and estimation of quality of macaroni products study 7. Assortment and estimation of quality of confectionery products study 8. Research and study of the range of starch 9. Assessment of the quality of sugar 10. Assortment and assessment of honey quality study 11. Research of edible fats 12. Research of milk and dairy products 13. Assortment and estimation of canned cane quality study 14. Research on the quality of fish and fish products 15. Quality assessment and assortment of beer 16. The classification, assortment and bases of tasting of grape and sparkling wines, evaluation of their quality study 17. Investigation of flavoring products 18. Interactions of food production with the environment
Language of teaching	Ukrainian, English

Title of discipline	Theoretical Foundations of Food Production Technologies
Teacher	Sergiy Narizhnyy PhD of Technical Sciences Assistant Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	2d, 1 and 2 semesters
Faculties where the students are offered to study the discipline	Biological-technological
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledge* - morphological and biochemical composition, physico-chemical and microbiological parameters and functional properties of the main components of food raw materials and products and their changes during technological processing; - structural and mechanical characteristics of raw materials, semi-finished products and finished products; - theoretical foundations of mechanical, diffusion, thermal, extraction technologies in the food industry; - the current level and prospects of the technology of food production in Ukraine and abroad; - generalized scientific and technical foundations of specific technological processes, a scientific approach to the improvement and intensification of technological processes in the decision of issues of optimization of production of high quality products and waste utilisation; - basic methods of raw material processing in food technologies and ways of their intensification based on the use of fundamental laws; - requirements of state standards to the quality of the main raw materials, auxiliary materials and finished products; - systems and methods of chemical and technological and microbiological control of production; - bases for the assessment of food quality; - functional properties of food additives; - ways of utilizing waste and secondary raw materials of the main production, ways of reducing and eliminating harmful industrial emissions and wastewater. ***Skills:*** - to create effective technologies using existing and up-to-date scientific and technical information; - to choose rational and expedient technological decisions and scientifically substantiate them; - to take part in researches on questions of technology of food production, to process and analyze the obtained results with the use of computing equipment;

	- to give an estimation of technologies and technological processes from the point of view of the raw materials usage, energy and changes that occur during the implementation of similar technological processes under equal conditions of their flow and make suggestions on the choice of rational management of technological processes for the production of high quality products and resource and energy savings ; - to develop and improve the basic and hardware-technological schemes of food technologies; - scientifically substantiate the regimes of technological processes and make suggestions for their improvement; - analyze the technological situation and the level of environmental safety of production; - work with special literature, find and use scientific and technical information on food industry technologies.
Discipline description	
Prerequisites needed for studing the discipline	The selective academic discipline "Theoretical Foundations of Food Production Technologies" is based on the knowledge of such disciplines as "Chemistry", "Biochemistry", "Higher mathematics", "Introduction to the speciality" and "Sensory analysis of food products", studied at the 1st year, and "Food Chemistry", "Technical Microbiology", "Technology for obtaining and controlling the quality of raw materials of the processing industry", "Standardization, Certification and Metrology", studied in the first semester of the 2 nd year.
Maximum number of students who can study simultaneously	25
Topics of classroom lessons	**Lecture topics:** 1. Composition of food raw materials 2. Proteins and other nitrogen compounds of raw materials, their properties 3. Lipids of raw materials and food products 4. Carbohydrates and their derivatives 5. Water and its importance in technological processes 6. Complexity of taste sensations 7. Physical properties of raw materials and food products 8. Changes in the structure and structural and mechanical properties of products in the process of processing 9. Basic methods of raw materials processing in food technologies. Mechanical processing of raw materials 10. Thermal processing processes

	11. Mass-exchange processes of food technologies 12. Chemical processes 13. Biochemical processes and the use of enzymes in food technologies 14 Microbiological processes in food technologies. Biotechnology 15. Safety of food masses 16. Chemical safety of food products 17. Quality of food products 18. Standardization and certification of food products **Topics of practical classes:** 1. Preparation of a food protein concentrate 2. Types of coagulation of globulin proteins. 3. The influence of temperature on the change of solubility of protein of meat 4. The influence of sucrose on the temperature of aggregation of egg proteins 5. Change of swelling of flour proteins under the influence of technological factors 6. Influence of concentration and composition of protein mixtures on their viscosity after heat treatment 7. Use of standards in food technology. Construction, content and classification of standards 8. Additives in the food industry 9. Influence of various factors on the hydrolysis of sucrose 10. Effect of heating temperature on organoleptic properties of sugar caramelized products 11. The influence of various factors on the starch gelatinisation 12. Change of organoleptic and physical properties of starch in the process of dry heating 13. Change in the degree of oxidation of fat in the process of heating 14. Change of organoleptic and physical properties of vegetable oil in the process of heat treatment 15. Change in the dry matter content of meat in the process of heat treatment 16. Effect of phosphates and organic acids on the moisture-keeping ability of meat 17. Investigation of the influence of the concentration and the duration of the mixing on the foaming ability of the foaming agents and on the stability of the foam 18. Influence of some additives on the foaming ability of some foaming agents
Language of teaching	Ukrainian, English

Title of discipline	**Biology of farm animal productivity**
Teacher	Merzlov Sergey Doctor of Agricultural Sciences, Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	5 year, 1 semesters
Faculties where the students are offered to study discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study of discipline is acquisition by the students the following knowledge and skills: Knowledge - morphological features, physiology, biochemistry, genetics, nutrition, animal ethology and technology of production of feed and products of livestock and poultry farming; biological mechanisms of action of nutrients and biologically active substances of feed and feed additives, including premixes, enzyme preparations, hormones, vitamins, antioxidants, stabilizers and other compounds. Influence of stimulants of productivity on processes of digestion, biosynthesis of components of milk, meat, eggs, skin, wool, formation and maturation of honey. The ability to use practical methods of managing the productivity of agricultural animals and the quality of their products; use interior values, tribal value when forecasting the productivity of farm animals, calculate the need for animals.
Descipline description	
Preconditions necessary for the study of discipline	Compulsory educational discipline " Biology of farm animal productivity " is based on knowledge of such disciplines as "Biochemistry and Chemistry", "Milk production technology", "Technology of meat production", "Breeding of s.-g. animals and poultry "," Feed technology and feeding s.-g. animals "," Hygiene of animals and bases of veterinary medicine "," Anatomy, morphology and histology of s.-g. Animal "," Physiology "," Organic and Biological Chemistry "," Microbiology "," Standardization, Certification and Metrology ", studied in previous courses.
Maximum number of students who can study simultaneously	100 students

Topics of classroom lessons	**Lecture topics** 1. Biochemical composition of feed, animal organism. BAR. 2. General characteristics of physico-chemical characteristics of feed. The biological meaning of carbohydrates, lipids, amino acids, water .. 3. Stimulants of animal productivity and application in animal husbandry. 4. Biological basis of dairy productivity of animals. Breast ontogenesis. The mechanism of milk formation. 5. Interaction of processes of digestion with milk productivity. Stimulation of dairy productivity. 6. Muscle tissue. Structure of muscle tissue. Biosynthesis of proteins of muscle tissue, biosynthesis of carbohydrates, lipids. 7. Stimulation of muscle productivity. 8. Biology of Egg Productivity. Egg Producer Stimulants. 9. Biology of leather and wool productivity .. 10. Biological basis of Bee Productivity. 11. Biochemical (interiors) tests of productivity of farm animals. 12. Intermediate tests for animal evaluation. 13. Determination of the total content and ratio of water and soluble fraction of green and roughage proteins. 14. Determination of the activity of amylase, protosubtilinum, phytamias as feed additives. **Topics of practical classes** 1. Determination of casein and its fractions in milk 2. Production of drinking milk types. 2. Chelation, complex formation. 3. Determination of the activity of trypsin and amylases of intestinal hymes. Determination of pH of the chest of the intestine. 4. Determination of protein content in muscle tissue .. 5. Determination of the activity of aminotransferases in the liver. 6. Determination of proteins, carotenoids in an egg. 7. Stimulants of woolen productivity. 8. Honey quality control .. 9. Determination of activity of alkaline phosphatase in the liver of farm animals with different levels 10. Study of the technique of obtaining serum from the blood. Determination of serum protein in animals with different levels of performance 11. Determination of the content of glycogen in the liver of animals .. 12. The use of stimulators of meat productivity for swine. 13. Physiological and biochemical mechanisms of digestion in bees. Biochemical processes in wax. Bees and poison 14. Determination of immunoglobulins in the blood of farm animals.
Language of teaching	Ukrainian, English

Title of discipline	**Innovative technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	masters, the 2nd year, the 3rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	- The result of studies to discipline is acquisition by the students of such knowledge and abilities : - is Knowledge of modern achievements and perspective directions of researches from processing of products of stock-raising; - it is Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches; - it is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements; - it is Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety; - it is Knowledge of modern technological processes of processing of raw material from making of different types of food products; - to Know, what changes the constituents of products yield as a result of technological treatment; - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop compounding and perfect existing with their next applying in industry; - to Know basic home laws and normative documents in relation to a quality and safety of food products management; it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products; - On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	
Preconditions necessary for the study of discipline	Food chemistry, biochemistry of milk and meat, biochemistry of dairy and meat products, technological calculations, technology of processing of products of stock-raising, technological chemical production of food products control
Maximum number of students who can study simultaneously	25 students

Topics of classroom lessons	**Lecture topics:** 1. Innovative technologies of processing of products of stock-raising is science dealing with modern technologies. 2. Modern requirements are to raw milk-material. Comparison of requirements of ДСТУ 3662. . Improvement of receipt and roughing-out of milk. 4. Innovative technologies of dairies. Ferments of the direct bringing. Prospects of expansion of assortment of dairies. 5. Actual technologies of buttermaking industry. 6. Actual technologies of сироробної industry. 7. Newest technologies of coalface and processing of cattle 8. Newest technologies of coalface and processing of pigs 9. Actual technologies of treatment of meat and products of coalface of animals. 10. The newest technologies of canning are in м'ясопереробній industry. 11. Expansion of assortment of meat products. Food additions. 12. Newest technologies of processing of products of the poultry farming. 13. Modern technology of processing of products of fish-farming. 14. Newest technologies of processing of products of beekeeping **Themes of practical classes:** 1. Actual technologies of processing of milk are Control of quality of raw milk-material. Improvement of technology of dairies. Production of cheese soul-milk and wares from him; production of oil by the method of knocking together; production of cheese on the example of cheese "Brynza" 2. Actual technologies of processing of beef and pork are Estimation of quality of meat raw material. An improvement of ripening of meat is for the actions of different technological factors. An improvement of technology of the boiled and smoked sausages is for the use of unmeat raw material. Development of compounding of meat breads. 3. Processing of products of the poultry farming, fish-farming and beekeeping. Control of quality of bird and products of her coalface is the newest technologies of coalface of bird. An improvement of technology of products is from meat of bird. Technology of processing of fish and fish caviar. Improvement of process of pickling of fish. Estimation of quality of honey. Exposure of falsification of honey. Technology of storage. Methods of application of honey are in food technologies.
Language of teaching	Ukrainian, English

Title of discipline	**Optimization of technological processes and energy resource of keeping technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	masters, the 2nd year, the 3rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes:** is Knowledge of modern achievements and perspective directions of optimization of technologies of processing of products of stock-raising - Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements. it is Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety it is Knowledge of modern technological processes of processing of raw material from making of different types of food products. - to Know, what changes the constituents of products yield as a result of technological treatment - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop and optimize compounding with their next applying in industry - to Know laws and normative documents in relation to a quality and safety of food products management. it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products, - On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	
Preconditions necessary for the study of discipline	Mathematician, statistician

Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Analysis of the systems of technological processes of industry. Optimization of technological parameters as factor of maintenance 2. Choice of weekend of data : requirements to the parameters and factors of optimization tasks. 3. Order of choice of mathematical model. Organization of experimental researches. 4. Planning, realization and working of data complete and fractional factor experiments 5. General description of methods of decision of optimization tasks 6. Quality estimation of quality of food products 7. Optimization of composition of the multicomponent systems. Compounding task of optimization of food mixture **Themes of practical classes:** 1. Optimization of technological parameters of production of food products 2. Organization of complete factor experiment for optimization of technological process 3. Receipt of mathematical model of technological process and her analysis 4. Receipt of mathematical model of technological process 5. Method of steep ascent 6. Quality estimation of quality of products 7. Application of method of organization of complete factor experiment is for optimization of composition of the multicomponent systems
Language of teaching	Ukrainian, English

Title of discipline	**Optimization of technological processes and energy resource of keeping technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	masters, the 2nd year, the 3rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes:** is Knowledge of modern achievements and perspective directions of optimization of technologies of processing of products of stock-raising - Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements. it is Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety it is Knowledge of modern technological processes of processing of raw material from making of different types of food products. - to Know, what changes the constituents of products yield as a result of technological treatment - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop and optimize compounding with their next applying in industry - to Know laws and normative documents in relation to a quality and safety of food products management. it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products, - On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	
Preconditions necessary for the study of discipline	Mathematician, statistician

Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Analysis of the systems of technological processes of industry. Optimization of technological parameters as factor of maintenance 2. Choice of weekend of data : requirements to the parameters and factors of optimization tasks. 3. Order of choice of mathematical model. Organization of experimental researches. 4. Planning, realization and working of data complete and fractional factor experiments 5. General description of methods of decision of optimization tasks 6. Quality estimation of quality of food products 7. Optimization of composition of the multicomponent systems. Compounding task of optimization of food mixture **Themes of practical classes:** 1. Optimization of technological parameters of production of food products 2. Organization of complete factor experiment for optimization of technological process 3. Receipt of mathematical model of technological process and her analysis 4. Receipt of mathematical model of technological process 5. Method of steep ascent 6. Quality estimation of quality of products 7. Application of method of organization of complete factor experiment is for optimization of composition of the multicomponent systems
Language of teaching	Ukrainian, English

Title of discipline	**Technology of meat and meat products**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	the 3nd year, the 2rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	-The result of studies to discipline is acquisition by the students of such knowledge and abilities : -is Knowledge of modern achievements and perspective directions of researches from processing of meat . - it is Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements. -- Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety -is Knowledge of modern technological processes of processing of meat and other raw material from making of different types of meat products. -it is Knowledge of modern technological processes of processing of raw material from making of different types of food products; -to Know, what changes the constituents of meat products yield as a result of technological treatment - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop compounding and perfect existing with their next applying in industry – -to Know basic home laws and normative documents in relation to a quality and safety of food products management. it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products, -- On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	

Preconditions necessary for the study of discipline	Food chemistry, biochemistry of meat and meat products, technological calculations, technological chemical production of meat products control
Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics** Meat raw material, composition and basic properties. 2. Quality assessment, marking and sorting of meat. Meat storage methods. 3. Processing technology of by-products. 4. Technology for the processing of blood and endocrine-enzymatic raw materials. 5. Technology of processing of poultry and eggs. 6. Sausage shells. 7. Technology of cooked sausages, sausages and sausages. 8. The technology of smoked sausage products. Features of production of meat breads, saltisons, liver and blood sausages. 10. Raw material in the production of canned food. Quality requirements. The main methods of preservation. 11. The technology of canned meat. 12. Technology of meat semi-finished products and frozen products. 13. Technology of combined meat products. 14. Processing of secondary meat raw material. **Themes of practical classes** 1. Evaluation of the quality of meat raw materials. Morphological and chemical composition, functional and technological properties and nutritional value of meat. 2. Stunning, slaughter and bleeding of animals and poultry. 3. By-products, processing and storage. 4. Blood composition, biological value and processing methods. 5. Features of bird processing, separation of carcasses (patronage and semi-penetration). Treatment of feather-down raw materials. Egg processing. 6. Natural and artificial sausage casings. Requirements for raw materials. Technology of obtaining artificial shells. 7. Assortment of cooked sausages. Quality of raw materials and finished products. Feature of production of smoked meat products. Methods of smoking, frying, drying and drying. 9. Production of meat loaves, saltisons, liver and blood sausages. Features of the technology.

	10. Study of the principles of canning. Requirements for quality of raw materials. 11. Features of canned food. 12. Natural, breaded, pickled and salted meat semis and half-finished poultry. 13. Ways of expanding the use of secondary raw material of animal origin. 14. Biological value of combined products.
Language of teaching	Ukrainian, English

Title of discipline	**Innovative technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	the 3nd year, the 5rd semester
Faculties which students are offered to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	- The result of learning discipline is the acquisition of such knowledge and skills by students: - - Knowledge of modern achievements and perspective directions of research on milk processing. - - Knowledge of the basic principles of scientific methodology and methods of laboratory and production research - - Knowledge of legal and organizational principles of advanced technologies for the processing of livestock products and solving their constituent elements. - - Knowledge of the basic laws and normative documents of Ukraine concerning the quality and safety of livestock raw materials and food safety management - - Knowledge of modern technological processes of processing of milk and other raw materials for the production of various types of dairy products - Know what changes are subjected to dairy products as a result of technological processing - Owning methods for assessing the quality of raw materials and finished products - Ability to develop recipes and improve existing ones with their subsequent introduction into production - Know the basic domestic laws and regulations on the management of quality and safety of food products. - Ability to analyze technology, to detect deviations from the norm, which cause a decrease in the quality of products - Based on knowledge of the scientific and practical bases of product quality formation, to be able to model the technological process
Discipline description	
Preconditions necessary for the study of discipline	Food chemistry, biochemistry of milk and dairy products, technological calculations, technological and chemical control of dairy products production

Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Milk-raw materials, composition and basic properties. 2. Separation of milk. Normalization. Pasteurization. 3. Technology of milk and milk drinks. 4. Technology of sour milk drinks. Sour Cream Technology. The technology of fermentation. 5. Technology of sour milk cheese. Cheesecake desserts. 6. Ice cream technology. 7. Butter. Methods of producing butter. Spread Technology. 8. Solid cheeses. Classification. Features of technology of different kinds of cheeses. 9. Soft whey cheeses. Features of the technology. 10. Fermented cheeses. Features of the technology. 11. Raw materials in the production of canned milk. Quality requirements. The main methods of preservation. 12. Technology of Condensed Milk. 13. Dry milk technology. 14. Technology of baby milk products, requirements for raw materials **Themes of practical classes:** 1. Evaluation of the quality of milk-raw materials 2. Normalization, technological calculations, pasteurization of milk. 3. Production of drinking milk types 4. Production of sour-milk drinks: leaven, kefir and yogurt. Assessment of the quality of finished products 5. Production of sour milk cheese. Tasting analysis and quality comparison. 6. Ice cream production. Quality assessment 7. Study of the production methods of butter cream. Obtaining oil in a way of collusion. Quality assessment. 8. Sire suitability. Production of whey cheeses. Quality assessment. 9. Production of cheese "Adyghe". Quality assessment. 10. Production of melted cheese. Features of the technology. 11. Study of the principles of preservation. Requirements for quality of raw materials. 12. Production of condensed milk with sugar 13. Evaluation of the quality of dry canned milk 14. Evaluation of the quality of baby milk products
Language of teaching	Ukrainian, English

Title of discipline	**Ecotrophology**
Teacher	Tetyana Dyman Doctor of agricultiral science Professor
Yearof study, semester	3d, 1 semester
Faculties whose students are invited to study discipline	Agrobiotehnological Biologo-technological Ecological Economical Veterinary medicine
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - software and data processing methods on human nutrition, individual and population health, foodstuff content; - ways and perspectives of food industry development in Ukraine and abroad, pecularities of nutrition in different settlement zones, national cuisines; - basic English terminology in the field of human nutrition, food industry, environmental protection; - main international and Ukrainian regulations on food safety; - foodstuff content; - changes of foodstuff content after heat treatment; - main directions of nanotechnology use in food industry; - main approaches to development of artificial food, functional food. *Skills:* - to apply the basic laboratory methods for determination of quality and technological properties of food and food raw materials; - to determine the functional state of human digestive system; - to detect foodstuff falsifications; - to determine normal body mass and its deviation; - to determine percent content of food ingredients; - to form diet for workers with different work intensity, age and sex; - to assess the state of food security in country; - to prevent alimentary disease; - to present results of own theoretical and practical research in the field of nutrition.

Discipline description	
Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Ecotrophology – science about sustainable nutrition 2. Human nutrition – the main object of Ecotrophology. Nutrition and health of Ukrainians 3. Classic and alternative theories and concepts of nutrition 4. Nutrition ecology 5. Food security 6. Ethnographic aspects of nutrition 7. Basics of nutrition physiology 8. Qualitative composition of the diet 9. Reducing the nutritional value of products during storage and processing 10. Fundamentals of food rationing 11. Urbanization and environmental factors that reduce the quality of food 12. Diseases of alimentary genesis 13. Sanitary and epidemiological significance of food 14 Optimization of population nutrition 15. New tendencies in human nutrition 16. Methods of food research **Themes of practical classes:** 1. Determination of normal body mass, body mass index, own metabolism and its deviation. 2. Analysis of the dynamics of population nutrition in Ukraine. 3. Assessment of the food security status in accordance with the Methodology for determining the main indicators of food security, approved by the CMU from December 5, 2007 No. 1379 “Some issues of food security” 4. Study of functional state of the human digestive system 5. Determination of taste areas of the tongue, threshold concentrations of flavoring substances 6. Determination of percent content of food ingredients 7. Determination of foodstuff quality 8. Development of diet for workers of different work intensity, age and sex 9. Determination of daily energy intake from food and daily energy expenditure of an organism

	10. Methods of determination of food falsification 11. Determination of hazardous substances in foodstuff 12. Identification of information signs on foodstuff packages 13. Ecological certification of foodstuff
Language of teaching	Ukrainian, English

Title of discipline	**Engineering graphics**
Teacher	Oksana Hrebelnyk Candidate of technical sciences (PhD) Associate Professor of the Department of food technologies and technologies of animal products processing
Yearof study, semester	2d, 2 semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - basic rules of image of space objects on a plane; - the basic methods of solving problems by means of the descriptive geometry - ways of constructing images of objects and parts in accordance with standards - images of connections of parts and diagrams; - reading of general drawings; - execution of drawings of assembly units; - knowledge of the basic provisions of the standards of Ukraine. *Skills:* - to analyze the shape of the object; to determine the position and magnitudes of its elements, the distances between them; - to perform and to read images of objects based on the rectangular projection method; - perform and read drawings of assembly units, drawings of general appearance; - to execute and read construction drawings, schemes of technological processes, general plans of processing enterprises; - to have drawings as a means of transmitting graphic

	information and presenting technical ideas
Discipline description	
Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Fundamentals of descriptive geometry 2. Orthogonal projections of straight lines 3. Orthogonal projections of the plane 4. Basic positional and metric problems 5. Convert complex drawing 6. Axonometric projections 7. Curve lines 8. Surface curves 9. Polyhedra 10. Fundamentals of technical drawing 11. Sections and sections 12. Now 13. Threaded connections 14. One-way connections 15. Types of design documentation 16. Schemes 17. Construction drawin **Themes of practical classes:** 1. Standard font 2. Drawing lines 3. Axonometric projections of a flat figure 4. Pairing 5. Oval, ellipse 6. Types 7. Sections 8. Flow chart 9. Construction drawing of processing plant
Language of teaching	Ukrainian, English

Title of discipline	**Materials science**
Teacher	Fedoruk Natalia Candidate of Agricultural Sciences, Associate Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	2 year, 2 semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study of discipline is acquisition by the students the following knowledge and skills: Knowledge: - the main relations between the composition, structure and properties of metals, alloys, plastic masses and other nonmetallic materials, patterns of their changes under the influence of thermal, chemical, mechanical and radiation effects;- Areas of effective use of ferrous, non-ferrous metals, their alloys, as well as polymeric and other non-metallic materials in the food industry. *Skills* - to determine the quality of the material according to its mechanical, technological and operational parameters; - to determine mechanical indices of materials; - to determine composition, properties, assignment of materials for their markings; - choose the necessary material for the manufacture of elements, units, parts of equipment and other equipment used in food technologies; - Choose packaging material and packaging to ensure maximum quality of food.
Discipline description	

Preconditions necessary for the study of discipline	Mandatory discipline "Materials Science" is based on knowledge of such disciplines as "Physics", "Higher Mathematics", "Inorganic Chemistry" and "Sensory analysis of food products", studied on the 1 st course, and "Food Chemistry", " Theoretical Foundations of Food Production Technology "," Computer Engineering and Programming "," Standardization, Certification and Metrology ", studied at advanced courses.
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Topics of in-class activity** 1. Basic concepts and provisions in the theory of material science. Historical review of the development of science. 2. General information about metals. Classification of metals. Electronic structure of the atom and periodic system of elements. Types of interatomic bonds in solids. Crystal structure of metals. 3. Crystallization of metals. Energy conditions of crystallization. Mechanism and kinetics of crystallization. Dendritic crystallization. Polymorphism. 4. Fundamentals of the theory of alloys. Types of interaction of components in alloys. Solid solutions for substitution and implementation. Limited and unlimited solubility of solid solutions. Mechanical mixes. Chemical compounds. 5. The concept of a diagram of the alloy state. The basic notions of the state diagram: eutectic, peritectic, eutectoid. Sequence rule. 6. The main types of diagrams of the state of alloys. 7. Iron-Carbon Alloys. Components of iron-carbon alloys, their characteristics. Phase of the system of iron - cementite. 8. Carbon steel. The main components and impurities of carbon steels. Characteristics, classification and labeling. 9. Cast iron. The main components of cast iron. Influence of the state of the main components and impurities on the structure and properties of cast iron. Classification of pig iron. 10. Alloy steel. The essence of the process of doping. Influence of doping elements on polymorphic transformation of iron. Classification, marking and application of alloyed steels. 11. Non-metallic structural materials. Fundamentals of the theory of structure and structural formation of nonmetallic structural materials. Polymers Structure and classification of polymers. Physical and mechanical properties of polymers. Plastics Thermoplastic, thermosetting plastics. Basic Properties and Applications 12. Rubber materials. General Information. Mechanical properties, purpose and application. Inorganic glass. The theory of glass formation. Composition of inorganic glass, basic properties and application.

	13. Wood materials. Composite materials. Terms. Fundamentals of structure formation and properties of composite materials. 14. Packing, its functions. Packing materials. Paper packaging, its properties. Aluminum packaging types. Polymer packaging. Glass packaging. 15. Application of biomaterials in the food industry. **Topics of practical classes** 1. Macrostructural analysis of metals and alloys. 2. Microstructural analysis of metals and alloys. 3. Study of the diagrams of the state of double alloys. 4. Annealing and normalization of carbon steels. Study of microstructure and hardness change. 5. Surface hardening of steels with high frequency currents. Chemical and thermal treatment of steels. 6. Study of the classification of packaging materials. 7. Classification and evaluation of quality of metal materials and containers. 8. Paper and cardboard packaging materials. 9. Polymer packaging materials. 10. Determination of the quality of glass. 11. Determination of the quality of wooden materiel. 12. Research of packaging materials used in the dairy industry. 13. Research of packaging materials used in the meat industry. 14. General principles for the selection of materials for the food industry. 15. Environmental aspect of packaging. Environmental and waste management measures.
Language of teaching	Ukrainian, English

Title of discipline	**Descriptive geometry**
Teacher	Oksana Hrebelnyk Candidate of technical sciences (PhD) Associate Professor of the Department of food technologies and technologies of animal products processing
Yearof study, semester	2d, 2 semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - basic rules of image of space objects on a plane; - the basic methods of solving problems by means of the descriptive geometry - ways of constructing images of objects and parts in accordance with standards - images of connections of parts and diagrams; - reading of general drawings; - execution of drawings of assembly units; - knowledge of the basic provisions of the standards of Ukraine. *Skills:* - to analyze the shape of the object; to determine the position and magnitudes of its elements, the distances between them; - to perform and to read images of objects based on the rectangular projection method; - perform and read drawings of assembly units, drawings of general appearance; - to execute and read construction drawings, schemes of technological processes, general plans of processing enterprises; - to have drawings as a means of transmitting graphic information and presenting technical ideas
Discipline description	

Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Lecture topics:** 1. Fundamentals of descriptive geometry 2. Orthogonal projections of straight lines 3. Orthogonal projections of the plane 4. Basic positional and metric problems 5. Convert complex drawing 6. Axonometric projections 7. Curve lines 8. Surface curves 9. Polyhedra 10. Fundamentals of technical drawing 11. Sections and sections 12. Now 13. Threaded connections 14. One-way connections 15. Types of design documentation 16. Schemes 17. Construction drawin **Themes of practical classes:** 1. Standard font 2. Drawing lines 3. Axonometric projections of a flat figure 4. Pairing 5. Oval, ellipse 6. Types 7. Sections 8. Flow chart 9. Construction drawing of processing plant
Language of teaching	Ukrainian, English

Title of discipline	Technology of livestock production processing
Teacher	Fedoruk Natalia Candidate of Agricultural Sciences, Associate Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	4 year, 1 and 2 semesters
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study of discipline is acquisition by the students the following knowledge and skills: Knowledge - latest achievements and future directions in research on processing of milk and meat; - basic principles of scientific methodology and methods of laboratory and industrial studies; legal and organizational basis of perspective technologies of processing of livestock products and their component elements; the basic laws and normative documents of Ukraine concerning quality and safety of animal raw materials and food safety control; modern technological processes of processing of milk and meat raw materials, the manufacture of various types of food products. The ability - know the methods of assessing the quality of raw materials and finished food products; - develop new and improve existing recipes and their subsequent introduction into production; - analyze the technology to determine abnormalities that cause a reduction in the quality of products; - knowledge-based scientific and practical bases of formation of quality products, to be able to simulate the process; - know the basic domestic laws and regulations on quality management and food safety.
Discipline description	
Preconditions necessary for the study of discipline	Compulsory educational discipline "Technology of livestock production processing" is based on knowledge of such disciplines as "Biochemistry and Chemistry", "Milk production technology", "Technology of meat production", "Breeding of s.-g. animals and poultry "," Feed technology and feeding s.-g. animals "," Hygiene of animals and bases of veterinary medicine "," Anatomy, morphology and histology of s.-g. Animal "," Physiology "," Organic and Biological Chemistry "," Microbiology ","

	Standardization, Certification and Metrology ", studied in previous courses.
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Lecture topics** 1. Primary milk processing. 2. Technology of drinking milk and milk drinks. 3. Technology of sour milk drinks. The technology of fermentation. 4. Technology of sour milk cheese. 5. Oil Technology and Spreads. 6. Features of technology of different kinds of cheeses. 7. Solid cheeses. Features of the technology. 8. Soft whey cheeses and melted cheeses. 9. Ice cream technology. 10. Milk Canning Technology. 11. Technology for the processing of bovine animals. 12. Pig processing technology 13. After slaughter changes in meat. 14. The main types of canning of meat and raw material of slaughter animals 15. Technology of processing of by-products. 16. Technology of processing beekeeping products. 17. Technology for the processing of rabbit meat products. 18. Technology of processing of horse breeding products. 19. Technology of poultry production processing. 20. Fish processing technology. **Topics of practical classes** 1. Evaluation of the quality of milk-raw materials. 2. Production of drinking milk types. 3. Production of sour-milk drinks: leaven, kefir and yogurt. Assessment of the quality of finished products. 4. Production of sour milk cheese. Tasting analysis and quality comparison. 5. Study of the production methods of butter cream. Obtaining oil in a way of collusion. Quality assessment. 6. Cheese suitability. Production of whey cheeses. Quality assessment. 7. Production of cheese "Adyghe". Quality assessment. 8. Manufacture of processed cheese. Quality assessment. 9. Ice cream production. Features of the technology. 10. Production of condensed milk with sugar. Study of the principles of canning. 11. Requirements for the quality of meat raw materials. Definition of

	freshness of meat. 12. Determination of the species of meat. 13. Post-slaughter changes in meat. Methods of canning meat. 14. Technology of primary processing of food by-products. 15. Evaluation of honey quality by organoleptic and laboratory methods of research. 16. Technological features of primary processing of rabbits. 17. Features of the technology of primary processing of horse breeding products. 18. Assessment of the quality of chicken-broiler meat by organoleptic and laboratory indices of research. 19. Estimation of fresh, frozen and smoked fish by organoleptic and laboratory indices of research, mass and elemental composition.
Language of teaching	Ukrainian. English

Title of discipline	**Applied mechanics**
Teacher	Oksana Hrebelnyk Candidate of technical sciences (PhD) Associate Professor of the Department of food technologies and technologies of animal products processing
Yearof study, semester	2d, 1 semester
Faculties whose students are invited to study discipline	Biologo-technological

List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - fundamentals of theoretical and technical mechanics; - principles of work of mechanical systems; ways to solve problems with their equilibrium; - mechanism of action of force of weight for work of machines and mechanisms; - causes and principle of friction of sliding and friction of rolling in the work of mechanical systems; basic and derivative parameters of mechanical gears -complex application of the theory to solve specific technical problems; - modern directions of development of machines and mechanisms; - economic indicators of the use of machine tools and mechanisms *Skills:* - to use the laws of mechanics in accordance with production situations; - to use, to control, to regulate and to manage machines and mechanisms in production processes; - to determine the center of gravity of mechanisms to ensure the safety of processes; - to choose materials depending on their coefficient of friction; - to carry out the analysis of equipment operation on the basis of integrated evaluation of the mechanisms included in their system; - to compare mechanical transfers in terms of their efficiency, power; to select the most effective mechanisms; - to use mechanisms, machines, equipment on the principles of energy saving, materials, labor, time.
Discipline description	
Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	100 students

Topics of classroom lessons	**Lecture topics:** 1. Fundamentals of theoretical mechanics 2. Types of systems of forces 3. Center of parallel forces and center of gravity 4. Friction. Slip friction, rolling friction 5. Kinematics. Kinematics point 6. Kinematics of the simplest movements of the solid 7. Technical Mechanics. Fundamentals of the theory of machines and mechanisms 8. Major groups of mechanisms 9. Mechanical transfers 10. Tooth gear 11. Pass transfers 12. Chain transfers 13. Basis of choice of mechanical gear **Themes of practical classes:** 1. Free, non-liberal bodies. 2. Linings and their reactions. 3. Determination of body equilibrium under a system of convergence forces (conditions of the first type). 4. Determination of body balance under a system of convergence forces (conditions of the second type). 5. Finding the coordinates of the center of gravity of the plane figure by the method of partition and the method of addition. 6. Finding the coordinates of the center of gravity of the plane weight by the experimental method 7. Determination of coefficient of friction of sliding of materials 8. Determination of the coefficient of friction of rolling materials 9. Structural analysis of flat mechanisms 10. Tooth gear. 11. Transmissions with flexible links. 12. Determination of the main parameters of the gear wheel
Language of teaching	Ukrainian, English
Title of discipline	The General Technology of Food Products
Teacher	Sergiy Narizhnyy PhD of Technical Sciences Assistant Professor of the Department of Food Technology
Year of study, semester	3d, 1 and 2 semesters
Faculties where the students	Biological-technological

are offered to study the discipline	
List of competencies and learning outcomes provided by the discipline	**Learning outcomes** *Knowledge* - basic technical and technological terms, the notion and definitions used in the food industry, types of products, composition and properties of raw materials, requirements for the quality of raw materials, vegetable, chemical ingredients and additives; - the essence of biochemical, physicochemical and microbiological aspects of technological processes of food production, changes occurring in raw materials under the influence of technological factors; - scientific and theoretical foundations of technological processes, principles of organization of technological flows of raw materials processing, manufacturing of food products of diverse purposes, methods of storage, preservation and processing of food raw materials; - optimal technological processes and modes of processing of food raw materials both in terms of energy and resource saving, and preservation of biologically active and other substances, and in some technologies and their accumulation (wine, cheese, beer, additives, etc.); - the bases of intensification of technological processes of processing of food products, development of rational recipes; - modern technologies of the food industry, classification, composition and properties of food raw materials, requirements for its quality, classification of food production, principles of food technologies, basic methods of mechanical and thermal processing of raw materials, purpose and principle of the main equipment operation, general technological schemes production of the main types of products and products from secondary raw materials; - methods of processing raw materials into food products for the purpose of choosing and practical application of the most effective in terms of quality and cost-effectiveness; - modern methods of processing of food raw materials on the basis of mechanization and automation of technological processes, with economic expediency of using different technologies and equipment; - principles of construction of technological schemes and hardware design of technological processes, the appointment of main equipment and the principle of its operation; - generalized scientific and technical foundations of specific technological processes, a scientific approach to the improvement and intensification of technological processes in the decision of issues of optimization of production of high quality products and utilization of waste;

	- the procedure for conducting quality control and requirements of standards for raw materials and finished products; - procedure for accounting of raw materials and finished products; - ways to utilize waste and secondary raw materials of the main production, ways of reducing and eliminating harmful industrial emissions and water waste. ***Skills:*** - to give a feasibility study of various technological measures, to substantiate the selection of equipment for the effective implementation of a particular technological process, to apply scientifically based, effective, energy-saving technologies of production of various types of food products; - it is grounded to choose assortment, modern technological schemes, parameters of raw materials processing and food products, hardware design of technological processes; - rational use of primary and secondary raw materials and materials; - to use modern methods of management, control of technological operations, to determine the main characteristics of raw materials, finished products; - use regulatory documents for the production of food products, the equipment and technological schemes navigation; - to analyze the technological situation and the level of environmental safety of production.
Discipline description	
Preconditions necessary for the study of discipline	Compulsory academic discipline "The General Technology of Food Products" is based on the knowledge of such disciplines as Chemistry, Biochemistry, Higher Mathematics, Introduction to the specialty and Sensory analysis of food products studied at the 1st year, and «Theoretical Foundations of Food Production Technologies», «Food chemistry», «Technical microbiology», «Technology of receipt and quality control of raw materials of processing industry», «Standardization, certification and metrology», studied on the 2 nd course.
Maximum number of students who can study simultaneously	25
Topics of classroom lessons	**Lecture topics:** 1. Introductory lecture 2. Technological systems and processes of food production 3. Technology of grain storage 4. Flour technology 5. Technology of cereals 6. Technology of bread and pasta 7. Confectionery technology

	8. Technology of starch and starch molasses 9. Sugar technology 10. Oil and fat technology 11. Dairy technology 12. Technology of meat products 13. Tin cans technology 14. Technology of fish products 15. Technology of Vodka and Alcoholic Beverages 16. Beer technology 17. Technology of juices and wine 18. Technology of pectin and pectin products **Topics of practical classes:** 1. Standardization of food products. Study methods for assessing the quality of food products 2. Grain quality of cereals and cereals study 3. Assortment and evaluation of flour quality study 4. Assortment and quality estimation of groats study 5. Evaluating the quality of bread and bakery products 6. Assortment and estimation of quality of macaroni products study 7. Assortment and estimation of quality of confectionery products study 8. Research and study of the range of starch 9. Assessment of the quality of sugar 10. Assortment and assessment of honey quality study 11. Research of edible fats 12. Research of milk and dairy products 13. Assortment and estimation of canned cane quality study 14. Research on the quality of fish and fish products 15. Quality assessment and assortment of beer 16. The classification, assortment and bases of tasting of grape and sparkling wines, evaluation of their quality study 17. Investigation of flavoring products 18. Interactions of food production with the environment
Language of teaching	Ukrainian, English

Title of discipline	Theoretical Foundations of Food Production Technologies
Teacher	Sergiy Narizhnyy PhD of Technical Sciences Assistant Professor of the Department of Food Technology
Year of study, semester	2d, 1 and 2 semesters
Faculties where the students are offered to study the discipline	Biological-technological
List of competencies and	**Learning outcomes**

learning outcomes provided by the discipline	*Knowledge* - morphological and biochemical composition, physico-chemical and microbiological parameters and functional properties of the main components of food raw materials and products and their changes during technological processing; - structural and mechanical characteristics of raw materials, semi-finished products and finished products; - theoretical foundations of mechanical, diffusion, thermal, extraction technologies in the food industry; - the current level and prospects of the technology of food production in Ukraine and abroad; - generalized scientific and technical foundations of specific technological processes, a scientific approach to the improvement and intensification of technological processes in the decision of issues of optimization of production of high quality products and waste utilisation; - basic methods of raw material processing in food technologies and ways of their intensification based on the use of fundamental laws; - requirements of state standards to the quality of the main raw materials, auxiliary materials and finished products; - systems and methods of chemical and technological and microbiological control of production; - bases for the assessment of food quality; - functional properties of food additives; - ways of utilizing waste and secondary raw materials of the main production, ways of reducing and eliminating harmful industrial emissions and wastewater. ***Skills:*** - to create effective technologies using existing and up-to-date scientific and technical information; - to choose rational and expedient technological decisions and scientifically substantiate them; - to take part in researches on questions of technology of food production, to process and analyze the obtained results with the use of computing equipment; - to give an estimation of technologies and technological processes from the point of view of the raw materials usage, energy and changes that occur during the implementation of similar technological processes under equal conditions of their flow and make suggestions on the choice of rational management of technological processes for the production of high quality products and resource and energy savings ; - to develop and improve the basic and hardware-technological schemes of food technologies; - scientifically substantiate the regimes of technological processes and make suggestions for their improvement;

	- analyze the technological situation and the level of environmental safety of production; - work with special literature, find and use scientific and technical information on food industry technologies.
Discipline description	
Prerequisites needed for studing the discipline	The selective academic discipline "Theoretical Foundations of Food Production Technologies" is based on the knowledge of such disciplines as "Chemistry", "Biochemistry", "Higher mathematics", "Introduction to the speciality" and "Sensory analysis of food products", studied at the 1st year, and "Food Chemistry", "Technical Microbiology", "Technology for obtaining and controlling the quality of raw materials of the processing industry", "Standardization, Certification and Metrology", studied in the first semester of the 2 nd year.
Maximum number of students who can study simultaneously	25
Topics of classroom lessons	**Lecture topics:** 1. Composition of food raw materials 2. Proteins and other nitrogen compounds of raw materials, their properties 3. Lipids of raw materials and food products 4. Carbohydrates and their derivatives 5. Water and its importance in technological processes 6. Complexity of taste sensations 7. Physical properties of raw materials and food products 8. Changes in the structure and structural and mechanical properties of products in the process of processing 9. Basic methods of raw materials processing in food technologies. Mechanical processing of raw materials 10. Thermal processing processes 11. Mass-exchange processes of food technologies 12. Chemical processes 13. Biochemical processes and the use of enzymes in food technologies 14 Microbiological processes in food technologies. Biotechnology 15. Safety of food masses 16. Chemical safety of food products 17. Quality of food products 18. Standardization and certification of food products **Topics of practical classes:**

	1. Preparation of a food protein concentrate 2. Types of coagulation of globulin proteins. 3. The influence of temperature on the change of solubility of protein of meat 4. The influence of sucrose on the temperature of aggregation of egg proteins 5. Change of swelling of flour proteins under the influence of technological factors 6. Influence of concentration and composition of protein mixtures on their viscosity after heat treatment 7. Use of standards in food technology. Construction, content and classification of standards 8. Additives in the food industry 9. Influence of various factors on the hydrolysis of sucrose 10. Effect of heating temperature on organoleptic properties of sugar caramelized products 11. The influence of various factors on the starch gelatinisation 12. Change of organoleptic and physical properties of starch in the process of dry heating 13. Change in the degree of oxidation of fat in the process of heating 14. Change of organoleptic and physical properties of vegetable oil in the process of heat treatment 15. Change in the dry matter content of meat in the process of heat treatment 16. Effect of phosphates and organic acids on the moisture-keeping ability of meat 17. Investigation of the influence of the concentration and the duration of the mixing on the foaming ability of the foaming agents and on the stability of the foam 18. Influence of some additives on the foaming ability of some foaming agents
Language of teaching	Ukrainian, English

Title of discipline	**Biology of farm animal productivity**
Teacher	Merzlov Sergey Doctor of Agricultural Sciences, Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	5 year, 1 semesters
Faculties where the	Faculty of Biotechnological

students are offered to study discipline	
List of competencies and learning outcomes provided by the discipline	The result of study of discipline is acquisition by the students the following knowledge and skills: Knowledge - morphological features, physiology, biochemistry, genetics, nutrition, animal ethology and technology of production of feed and products of livestock and poultry farming; biological mechanisms of action of nutrients and biologically active substances of feed and feed additives, including premixes, enzyme preparations, hormones, vitamins, antioxidants, stabilizers and other compounds. Influence of stimulants of productivity on processes of digestion, biosynthesis of components of milk, meat, eggs, skin, wool, formation and maturation of honey. The ability to use practical methods of managing the productivity of agricultural animals and the quality of their products; use interior values, tribal value when forecasting the productivity of farm animals, calculate the need for animals.
Discipline description	
Preconditions necessary for the study of discipline	Compulsory educational discipline " Biology of farm animal productivity " is based on knowledge of such disciplines as "Biochemistry and Chemistry", "Milk production technology", "Technology of meat production", "Breeding of s.-g. animals and poultry "," Feed technology and feeding s.-g. animals "," Hygiene of animals and bases of veterinary medicine "," Anatomy, morphology and histology of s.-g. Animal "," Physiology "," Organic and Biological Chemistry "," Microbiology "," Standardization, Certification and Metrology ", studied in previous courses.
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Lecture topics** 1. Biochemical composition of feed, animal organism. BAR. 2. General characteristics of physico-chemical characteristics of feed. The biological meaning of carbohydrates, lipids, amino acids, water .. 3. Stimulants of animal productivity and application in animal husbandry. 4. Biological basis of dairy productivity of animals. Breast ontogenesis. The mechanism of milk formation. 5. Interaction of processes of digestion with milk productivity. Stimulation of dairy productivity. 6. Muscle tissue. Structure of muscle tissue. Biosynthesis of proteins of muscle tissue, biosynthesis of carbohydrates, lipids. 7. Stimulation of muscle productivity.

	8. Biology of Egg Productivity. Egg Producer Stimulants. 9. Biology of leather and wool productivity .. 10. Biological basis of Bee Productivity. 11. Biochemical (interiors) tests of productivity of farm animals. 12. Intermediate tests for animal evaluation. 13. Determination of the total content and ratio of water and soluble fraction of green and roughage proteins. 14. Determination of the activity of amylase, protosubtilinum, phytamias as feed additives. **Topics of practical classes** 1. Determination of casein and its fractions in milk 2. Production of drinking milk types. 2. Chelation, complex formation. 3. Determination of the activity of trypsin and amylases of intestinal hymes. Determination of pH of the chest of the intestine. 4. Determination of protein content in muscle tissue .. 5. Determination of the activity of aminotransferases in the liver. 6. Determination of proteins, carotenoids in an egg. 7. Stimulants of woolen productivity. 8. Honey quality control .. 9. Determination of activity of alkaline phosphatase in the liver of farm animals with different levels 10. Study of the technique of obtaining serum from the blood. Determination of serum protein in animals with different levels of performance 11. Determination of the content of glycogen in the liver of animals .. 12. The use of stimulators of meat productivity for swine. 13. Physiological and biochemical mechanisms of digestion in bees. Biochemical processes in wax. Bees and poison 14. Determination of immunoglobulins in the blood of farm animals.
Language of teaching	Ukrainian, English

Title of discipline	**Innovative technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	masters, the 2nd year, the 3rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	- The result of studies to discipline is acquisition by the students of such knowledge and abilities : - is Knowledge of modern achievements and perspective directions of researches from processing of products of stock-raising; - it is Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches; - it is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements; - it is Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety; - it is Knowledge of modern technological processes of processing of raw material from making of different types of food products; - to Know, what changes the constituents of products yield as a result of technological treatment; - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop compounding and perfect existing with their next applying in industry; - to Know basic home laws and normative documents in relation to a quality and safety of food products management; it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products; - On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	
Preconditions necessary for the study of discipline	Food chemistry, biochemistry of milk and meat, biochemistry of dairy and meat products, technological calculations, technology of processing of products of stock-raising, technological chemical production of food products control
Maximum number of students who can study simultaneously	25 students

Topics of classroom lessons	**Lecture topics:** 1. Innovative technologies of processing of products of stock-raising is science dealing with modern technologies. 2. Modern requirements are to raw milk-material. Comparison of requirements of ДСТУ 3662. . Improvement of receipt and roughing-out of milk. 4. Innovative technologies of dairies. Ferments of the direct bringing. Prospects of expansion of assortment of dairies. 5. Actual technologies of buttermaking industry. 6. Actual technologies of сироробної industry. 7. Newest technologies of coalface and processing of cattle 8. Newest technologies of coalface and processing of pigs 9. Actual technologies of treatment of meat and products of coalface of animals. 10. The newest technologies of canning are in м'ясопереробній industry. 11. Expansion of assortment of meat products. Food additions. 12. Newest technologies of processing of products of the poultry farming. 13. Modern technology of processing of products of fish-farming. 14. Newest technologies of processing of products of beekeeping **Themes of practical classes:** 4. Actual technologies of processing of milk are Control of quality of raw milk-material. Improvement of technology of dairies. Production of cheese soul-milk and wares from him; production of oil by the method of knocking together; production of cheese on the example of cheese "Brynza" 5. Actual technologies of processing of beef and pork are Estimation of quality of meat raw material. An improvement of ripening of meat is for the actions of different technological factors. An improvement of technology of the boiled and smoked sausages is for the use of unmeat raw material. Development of compounding of meat breads. 6. Processing of products of the poultry farming, fish-farming and beekeeping. Control of quality of bird and products of her coalface is the newest technologies of coalface of bird. An improvement of technology of products is from meat of bird. Technology of processing of fish and fish caviar. Improvement of process of pickling of fish. Estimation of quality of honey. Exposure of falsification of honey. Technology of storage. Methods of application of honey are in food technologies.
Language of teaching	Ukrainian, English

Title of discipline	**Optimization of technological processes and energy resource of keeping technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	masters, the 2nd year, the 3rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes:** is Knowledge of modern achievements and perspective directions of optimization of technologies of processing of products of stock-raising - Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements. it is Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety it is Knowledge of modern technological processes of processing of raw material from making of different types of food products. - to Know, what changes the constituents of products yield as a result of technological treatment - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop and optimize compounding with their next applying in industry - to Know laws and normative documents in relation to a quality and safety of food products management. it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products, - On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	
Preconditions necessary for the study of discipline	Mathematician, statistician

Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Analysis of the systems of technological processes of industry. Optimization of technological parameters as factor of maintenance 2. Choice of weekend of data : requirements to the parameters and factors of optimization tasks. 3. Order of choice of mathematical model. Organization of experimental researches. 4. Planning, realization and working of data complete and fractional factor experiments 5. General description of methods of decision of optimization tasks 6. Quality estimation of quality of food products 7. Optimization of composition of the multicomponent systems. Compounding task of optimization of food mixture **Themes of practical classes:** 1. Optimization of technological parameters of production of food products 2. Organization of complete factor experiment for optimization of technological process 3. Receipt of mathematical model of technological process and her analysis 4. Receipt of mathematical model of technological process 5. Method of steep ascent 6. Quality estimation of quality of products 7. Application of method of organization of complete factor experiment is for optimization of composition of the multicomponent systems
Language of teaching	Ukrainian, English

Title of discipline	**Optimization of technological processes and energy resource of keeping technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	masters, the 2nd year, the 3rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes:** is Knowledge of modern achievements and perspective directions of optimization of technologies of processing of products of stock-raising - Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements. it is Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety it is Knowledge of modern technological processes of processing of raw material from making of different types of food products. - to Know, what changes the constituents of products yield as a result of technological treatment - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop and optimize compounding with their next applying in industry - to Know laws and normative documents in relation to a quality and safety of food products management. it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products, - On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	
Preconditions necessary for the study of discipline	Mathematician, statistician

Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Analysis of the systems of technological processes of industry. Optimization of technological parameters as factor of maintenance 2. Choice of weekend of data : requirements to the parameters and factors of optimization tasks. 3. Order of choice of mathematical model. Organization of experimental researches. 4. Planning, realization and working of data complete and fractional factor experiments 5. General description of methods of decision of optimization tasks 6. Quality estimation of quality of food products 7. Optimization of composition of the multicomponent systems. Compounding task of optimization of food mixture **Themes of practical classes:** 1. Optimization of technological parameters of production of food products 2. Organization of complete factor experiment for optimization of technological process 3. Receipt of mathematical model of technological process and her analysis 4. Receipt of mathematical model of technological process 5. Method of steep ascent 6. Quality estimation of quality of products 7. Application of method of organization of complete factor experiment is for optimization of composition of the multicomponent systems
Language of teaching	Ukrainian, English

Title of discipline	**Technology of meat and meat products**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	the 3nd year, the 2rd semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	-The result of studies to discipline is acquisition by the students of such knowledge and abilities : -is Knowledge of modern achievements and perspective directions of researches from processing of meat . - it is Knowledge of basic principles of scientific methodology and methods of realization of laboratory and productive researches is Knowledge of legal and organizational principles of perspective technologies of processing of products of stock-raising and decision of their component elements. -- Knowledge of basic laws and normative documents of Ukraine in relation to quality and unconcern of stock-raising raw material and management of food products safety -is Knowledge of modern technological processes of processing of meat and other raw material from making of different types of meat products. -it is Knowledge of modern technological processes of processing of raw material from making of different types of food products; -to Know, what changes the constituents of meat products yield as a result of technological treatment - Possessing the methods of estimation of quality of raw material and prepared products is Ability to develop compounding and perfect existing with their next applying in industry – -to Know basic home laws and normative documents in relation to a quality and safety of food products management. it is Ability to analyse technology, determine deviations from a norm, that cause the decline of quality of products, -- On the basis of knowledge of research and practice bases of forming of quality of products, able to design a technological process
Discipline description	

Preconditions necessary for the study of discipline	Food chemistry, biochemistry of meat and meat products, technological calculations, technological chemical production of meat products control
Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics** Meat raw material, composition and basic properties. 2. Quality assessment, marking and sorting of meat. Meat storage methods. 3. Processing technology of by-products. 4. Technology for the processing of blood and endocrine-enzymatic raw materials. 5. Technology of processing of poultry and eggs. 6. Sausage shells. 7. Technology of cooked sausages, sausages and sausages. 8. The technology of smoked sausage products. Features of production of meat breads, saltisons, liver and blood sausages. 10. Raw material in the production of canned food. Quality requirements. The main methods of preservation. 11. The technology of canned meat. 12. Technology of meat semi-finished products and frozen products. 13. Technology of combined meat products. 14. Processing of secondary meat raw material. **Themes of practical classes** 1. Evaluation of the quality of meat raw materials. Morphological and chemical composition, functional and technological properties and nutritional value of meat. 2. Stunning, slaughter and bleeding of animals and poultry. 3. By-products, processing and storage. 4. Blood composition, biological value and processing methods. 5. Features of bird processing, separation of carcasses (patronage and semi-penetration). Treatment of feather-down raw materials. Egg processing. 6. Natural and artificial sausage casings. Requirements for raw materials. Technology of obtaining artificial shells. 7. Assortment of cooked sausages. Quality of raw materials and finished products. Feature of production of smoked meat products. Methods of smoking, frying, drying and drying. 9. Production of meat loaves, saltisons, liver and blood sausages. Features of the technology.

	10. Study of the principles of canning. Requirements for quality of raw materials. 11. Features of canned food. 12. Natural, breaded, pickled and salted meat semis and half-finished poultry. 13. Ways of expanding the use of secondary raw material of animal origin. 14. Biological value of combined products.
Language of teaching	Ukrainian, English

Title of discipline	**Innovative technologies of processing of products of stock-raising**
Teacher	Kalinina Halyna department of food technologies and technologies of animal products processing
Yearof study, semester	the 3nd year, the 5rd semester
Faculties which students are offered to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	- The result of learning discipline is the acquisition of such knowledge and skills by students: - - Knowledge of modern achievements and perspective directions of research on milk processing. - - Knowledge of the basic principles of scientific methodology and methods of laboratory and production research - - Knowledge of legal and organizational principles of advanced technologies for the processing of livestock products and solving their constituent elements. - - Knowledge of the basic laws and normative documents of Ukraine concerning the quality and safety of livestock raw materials and food safety management - - Knowledge of modern technological processes of processing of milk and other raw materials for the production of various types of dairy products - Know what changes are subjected to dairy products as a result of technological processing - Owning methods for assessing the quality of raw materials and finished products - Ability to develop recipes and improve existing ones with their subsequent introduction into production - Know the basic domestic laws and regulations on the management of quality and safety of food products. - Ability to analyze technology, to detect deviations from the norm, which cause a decrease in the quality of products - Based on knowledge of the scientific and practical bases of product quality formation, to be able to model the technological process
Discipline description	
Preconditions necessary for the study of discipline	Food chemistry, biochemistry of milk and dairy products, technological calculations, technological and chemical control of dairy products production

Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Milk-raw materials, composition and basic properties. 2. Separation of milk. Normalization. Pasteurization. 3. Technology of milk and milk drinks. 4. Technology of sour milk drinks. Sour Cream Technology. The technology of fermentation. 5. Technology of sour milk cheese. Cheesecake desserts. 6. Ice cream technology. 7. Butter. Methods of producing butter. Spread Technology. 8. Solid cheeses. Classification. Features of technology of different kinds of cheeses. 9. Soft whey cheeses. Features of the technology. 10. Fermented cheeses. Features of the technology. 11. Raw materials in the production of canned milk. Quality requirements. The main methods of preservation. 12. Technology of Condensed Milk. 13. Dry milk technology. 14. Technology of baby milk products, requirements for raw materials **Themes of practical classes:** 10. Evaluation of the quality of milk-raw materials 11. Normalization, technological calculations, pasteurization of milk. 12. Production of drinking milk types 13. Production of sour-milk drinks: leaven, kefir and yogurt. Assessment of the quality of finished products 14. Production of sour milk cheese. Tasting analysis and quality comparison. 15. Ice cream production. Quality assessment 16. Study of the production methods of butter cream. Obtaining oil in a way of collusion. Quality assessment. 17. Sire suitability. Production of whey cheeses. Quality assessment. 18. Production of cheese "Adyghe". Quality assessment. 10. Production of melted cheese. Features of the technology. 11. Study of the principles of preservation. Requirements for quality of raw materials. 12. Production of condensed milk with sugar 13. Evaluation of the quality of dry canned milk 14. Evaluation of the quality of baby milk products
Language of teaching	Ukrainian, English

Title of discipline	**Ecotrophology**
Teacher	Tetyana Dyman Doctor of agricultiral science Professor
Yearof study, semester	3d, 1 semester
Faculties whose students are invited to study discipline	Agrobiotehnological Biologo-technological Ecological Economical Veterinary medicine
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - software and data processing methods on human nutrition, individual and population health, foodstuff content; - ways and perspectives of food industry development in Ukraine and abroad, pecularities of nutrition in different settlement zones, national cuisines; - basic English terminology in the field of human nutrition, food industry, environmental protection; - main international and Ukrainian regulations on food safety; - foodstuff content; - changes of foodstuff content after heat treatment; - main directions of nanotechnology use in food industry; - main approaches to development of artificial food, functional food. *Skills:* - to apply the basic laboratory methods for determination of quality and technological properties of food and food raw materials; - to determine the functional state of human digestive system; - to detect foodstuff falsifications; - to determine normal body mass and its deviation; - to determine percent content of food ingredients; - to form diet for workers with different work intensity, age and sex; - to assess the state of food security in country; - to prevent alimentary disease; - to present results of own theoretical and practical research in the field of nutrition.
Discipline description	

Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Ecotrophology – science about sustainable nutrition 2. Human nutrition – the main object of Ecotrophology. Nutrition and health of Ukrainians 3. Classic and alternative theories and concepts of nutrition 4. Nutrition ecology 5. Food security 6. Ethnographic aspects of nutrition 7. Basics of nutrition physiology 8. Qualitative composition of the diet 9. Reducing the nutritional value of products during storage and processing 10. Fundamentals of food rationing 11. Urbanization and environmental factors that reduce the quality of food 12. Diseases of alimentary genesis 13. Sanitary and epidemiological significance of food 14 Optimization of population nutrition 15. New tendencies in human nutrition 16. Methods of food research **Themes of practical classes:** 1. Determination of normal body mass, body mass index, own metabolism and its deviation. 2. Analysis of the dynamics of population nutrition in Ukraine. 3. Assessment of the food security status in accordance with the Methodology for determining the main indicators of food security, approved by the CMU from December 5, 2007 No. 1379 “Some issues of food security” 4. Study of functional state of the human digestive system 5. Determination of taste areas of the tongue, threshold concentrations of flavoring substances 6. Determination of percent content of food ingredients 7. Determination of foodstuff quality 8. Development of diet for workers of different work intensity, age and sex 9. Determination of daily energy intake from food and daily energy expenditure of an organism 10. Methods of determination of food falsification 11. Determination of hazardous substances in foodstuff

	12. Identification of information signs on foodstuff packages 13. Ecological certification of foodstuff
Language of teaching	Ukrainian, English

Title of discipline	**Engineering graphics**
Teacher	Oksana Hrebelnyk Candidate of technical sciences (PhD) Associate Professor of the Department of food technologies and technologies of animal products processing
Yearof study, semester	2d, 2 semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - basic rules of image of space objects on a plane; - the basic methods of solving problems by means of the descriptive geometry - ways of constructing images of objects and parts in accordance with standards - images of connections of parts and diagrams; - reading of general drawings; - execution of drawings of assembly units; - knowledge of the basic provisions of the standards of Ukraine. *Skills:* - to analyze the shape of the object; to determine the position and magnitudes of its elements, the distances between them; - to perform and to read images of objects based on the rectangular projection method; - perform and read drawings of assembly units, drawings of general appearance; - to execute and read construction drawings, schemes of technological processes, general plans of processing enterprises; - to have drawings as a means of transmitting graphic information and presenting technical ideas

Discipline description	
Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	25 students
Topics of classroom lessons	**Lecture topics:** 1. Fundamentals of descriptive geometry 2. Orthogonal projections of straight lines 3. Orthogonal projections of the plane 4. Basic positional and metric problems 5. Convert complex drawing 6. Axonometric projections 7. Curve lines 8. Surface curves 9. Polyhedra 10. Fundamentals of technical drawing 11. Sections and sections 12. Now 13. Threaded connections 14. One-way connections 15. Types of design documentation 16. Schemes 17. Construction drawin **Themes of practical classes:** 1. Standard font 2. Drawing lines 3. Axonometric projections of a flat figure 4. Pairing 5. Oval, ellipse 6. Types 7. Sections 8. Flow chart 9. Construction drawing of processing plant
Language of teaching	Ukrainian, English

Title of discipline	**Materials science**
Teacher	Fedoruk Natalia Candidate of Agricultural Sciences, Associate Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	2 year, 2 semester
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study of discipline is acquisition by the students the following knowledge and skills: Knowledge: - the main relations between the composition, structure and properties of metals, alloys, plastic masses and other nonmetallic materials, patterns of their changes under the influence of thermal, chemical, mechanical and radiation effects;- Areas of effective use of ferrous, non-ferrous metals, their alloys, as well as polymeric and other non-metallic materials in the food industry. *Skills* - to determine the quality of the material according to its mechanical, technological and operational parameters; - to determine mechanical indices of materials; - to determine composition, properties, assignment of materials for their markings; - choose the necessary material for the manufacture of elements, units, parts of equipment and other equipment used in food technologies; - Choose packaging material and packaging to ensure maximum quality of food.
Discipline description	

Preconditions necessary for the study of discipline	Mandatory discipline "Materials Science" is based on knowledge of such disciplines as "Physics", "Higher Mathematics", "Inorganic Chemistry" and "Sensory analysis of food products", studied on the 1 st course, and "Food Chemistry", " Theoretical Foundations of Food Production Technology "," Computer Engineering and Programming "," Standardization, Certification and Metrology ", studied at advanced courses.
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Topics of in-class activity** 1. Basic concepts and provisions in the theory of material science. Historical review of the development of science. 2. General information about metals. Classification of metals. Electronic structure of the atom and periodic system of elements. Types of interatomic bonds in solids. Crystal structure of metals. 3. Crystallization of metals. Energy conditions of crystallization. Mechanism and kinetics of crystallization. Dendritic crystallization. Polymorphism. 4. Fundamentals of the theory of alloys. Types of interaction of components in alloys. Solid solutions for substitution and implementation. Limited and unlimited solubility of solid solutions. Mechanical mixes. Chemical compounds. 5. The concept of a diagram of the alloy state. The basic notions of the state diagram: eutectic, peritectic, eutectoid. Sequence rule. 6. The main types of diagrams of the state of alloys. 7. Iron-Carbon Alloys. Components of iron-carbon alloys, their characteristics. Phase of the system of iron - cementite. 8. Carbon steel. The main components and impurities of carbon steels. Characteristics, classification and labeling. 9. Cast iron. The main components of cast iron. Influence of the state of the main components and impurities on the structure and properties of cast iron. Classification of pig iron. 10. Alloy steel. The essence of the process of doping. Influence of doping elements on polymorphic transformation of iron. Classification, marking and application of alloyed steels. 11. Non-metallic structural materials. Fundamentals of the theory of structure and structural formation of nonmetallic structural materials. Polymers Structure and classification of polymers. Physical and mechanical properties of polymers. Plastics Thermoplastic, thermosetting plastics. Basic Properties and Applications 12. Rubber materials. General Information. Mechanical properties, purpose and application. Inorganic glass. The theory of glass formation. Composition of inorganic glass, basic properties and application.

	13. Wood materials. Composite materials. Terms. Fundamentals of structure formation and properties of composite materials. 14. Packing, its functions. Packing materials. Paper packaging, its properties. Aluminum packaging types. Polymer packaging. Glass packaging. 15. Application of biomaterials in the food industry. **Topics of practical classes** 1. Macrostructural analysis of metals and alloys. 2. Microstructural analysis of metals and alloys. 3. Study of the diagrams of the state of double alloys. 4. Annealing and normalization of carbon steels. Study of microstructure and hardness change. 5. Surface hardening of steels with high frequency currents. Chemical and thermal treatment of steels. 6. Study of the classification of packaging materials. 7. Classification and evaluation of quality of metal materials and containers. 8. Paper and cardboard packaging materials. 9. Polymer packaging materials. 10. Determination of the quality of glass. 11. Determination of the quality of wooden materiel. 12. Research of packaging materials used in the dairy industry. 13. Research of packaging materials used in the meat industry. 14. General principles for the selection of materials for the food industry. 15. Environmental aspect of packaging. Environmental and waste management measures.
Language of teaching	Ukrainian, English

Title of discipline	**Descriptive geometry**
Teacher	Oksana Hrebelnyk Candidate of technical sciences (PhD) Associate Professor of the Department of food technologies and technologies of animal products processing
Yearof study, semester	2d, 2 semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - basic rules of image of space objects on a plane; - the basic methods of solving problems by means of the descriptive geometry - ways of constructing images of objects and parts in accordance with standards - images of connections of parts and diagrams; - reading of general drawings; - execution of drawings of assembly units; - knowledge of the basic provisions of the standards of Ukraine. *Skills:* - to analyze the shape of the object; to determine the position and magnitudes of its elements, the distances between them; - to perform and to read images of objects based on the rectangular projection method; - perform and read drawings of assembly units, drawings of general appearance; - to execute and read construction drawings, schemes of technological processes, general plans of processing enterprises; - to have drawings as a means of transmitting graphic information and presenting technical ideas
Discipline description	

Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Lecture topics:** 1. Fundamentals of descriptive geometry 2. Orthogonal projections of straight lines 3. Orthogonal projections of the plane 4. Basic positional and metric problems 5. Convert complex drawing 6. Axonometric projections 7. Curve lines 8. Surface curves 9. Polyhedra 10. Fundamentals of technical drawing 11. Sections and sections 12. Now 13. Threaded connections 14. One-way connections 15. Types of design documentation 16. Schemes 17. Construction drawin **Themes of practical classes:** 1. Standard font 2. Drawing lines 3. Axonometric projections of a flat figure 4. Pairing 5. Oval, ellipse 6. Types 7. Sections 8. Flow chart 9. Construction drawing of processing plant
Language of teaching	Ukrainian, English

Title of discipline	**Technology of livestock production processing**
Teacher	Fedoruk Natalia Candidate of Agricultural Sciences, Associate Professor of the Department of Food Technologies and Technologies of Animal Production Processing
Year of study, semester	4 year, 1 and 2 semesters
Faculties where the students are offered to study the discipline	Faculty of Biotechnological
List of competencies and learning outcomes provided by the discipline	The result of study of discipline is acquisition by the students the following knowledge and skills: Knowledge - latest achievements and future directions in research on processing of milk and meat; - basic principles of scientific methodology and methods of laboratory and industrial studies; legal and organizational basis of perspective technologies of processing of livestock products and their component elements; the basic laws and normative documents of Ukraine concerning quality and safety of animal raw materials and food safety control; modern technological processes of processing of milk and meat raw materials, the manufacture of various types of food products. The ability - know the methods of assessing the quality of raw materials and finished food products; - develop new and improve existing recipes and their subsequent introduction into production; - analyze the technology to determine abnormalities that cause a reduction in the quality of products; - knowledge-based scientific and practical bases of formation of quality products, to be able to simulate the process; - know the basic domestic laws and regulations on quality management and food safety.
Discipline description	
Preconditions necessary for the study of discipline	Compulsory educational discipline "Technology of livestock production processing" is based on knowledge of such disciplines as "Biochemistry and Chemistry", "Milk production technology", "Technology of meat production", "Breeding of s.-g. animals and poultry "," Feed technology and feeding s.-g. animals "," Hygiene of animals and bases of veterinary medicine "," Anatomy, morphology and histology of s.-g. Animal "," Physiology "," Organic and Biological Chemistry "," Microbiology ","

	Standardization, Certification and Metrology ", studied in previous courses.
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Lecture topics** 1. Primary milk processing. 2. Technology of drinking milk and milk drinks. 3. Technology of sour milk drinks. The technology of fermentation. 4. Technology of sour milk cheese. 5. Oil Technology and Spreads. 6. Features of technology of different kinds of cheeses. 7. Solid cheeses. Features of the technology. 8. Soft whey cheeses and melted cheeses. 9. Ice cream technology. 10. Milk Canning Technology. 11. Technology for the processing of bovine animals. 12. Pig processing technology 13. After slaughter changes in meat. 14. The main types of canning of meat and raw material of slaughter animals 15. Technology of processing of by-products. 16. Technology of processing beekeeping products. 17. Technology for the processing of rabbit meat products. 18. Technology of processing of horse breeding products. 19. Technology of poultry production processing. 20. Fish processing technology. **Topics of practical classes** 1. Evaluation of the quality of milk-raw materials. 2. Production of drinking milk types. 3. Production of sour-milk drinks: leaven, kefir and yogurt. Assessment of the quality of finished products. 4. Production of sour milk cheese. Tasting analysis and quality comparison. 5. Study of the production methods of butter cream. Obtaining oil in a way of collusion. Quality assessment. 6. Cheese suitability. Production of whey cheeses. Quality assessment. 7. Production of cheese "Adyghe". Quality assessment. 8. Manufacture of processed cheese. Quality assessment. 9. Ice cream production. Features of the technology. 10. Production of condensed milk with sugar. Study of the principles of canning. 11. Requirements for the quality of meat raw materials. Definition of

	freshness of meat. 12. Determination of the species of meat. 13. Post-slaughter changes in meat. Methods of canning meat. 14. Technology of primary processing of food by-products. 15. Evaluation of honey quality by organoleptic and laboratory methods of research. 16. Technological features of primary processing of rabbits. 17. Features of the technology of primary processing of horse breeding products. 18. Assessment of the quality of chicken-broiler meat by organoleptic and laboratory indices of research. 19. Estimation of fresh, frozen and smoked fish by organoleptic and laboratory indices of research, mass and elemental composition.
Language of teaching	Ukrainian. English

Title of discipline	**Applied mechanics**
Teacher	Oksana Hrebelnyk Candidate of technical sciences (PhD) Associate Professor of the Department of food technologies and technologies of animal products processing
Yearof study, semester	2d, 1 semester
Faculties whose students are invited to study discipline	Biologo-technological
List of competencies and learning outcomes providing discipline	**Learning outcomes** *Knowledges* - fundamentals of theoretical and technical mechanics; - principles of work of mechanical systems; ways to solve problems with their equilibrium; - mechanism of action of force of weight for work of machines and mechanisms; - causes and principle of friction of sliding and friction of rolling in the work of mechanical systems; basic and derivative parameters of mechanical gears -complex application of the theory to solve specific technical problems; - modern directions of development of machines and mechanisms; - economic indicators of the use of machine tools and

	mechanisms *Skills:* - to use the laws of mechanics in accordance with production situations; - to use, to control, to regulate and to manage machines and mechanisms in production processes; - to determine the center of gravity of mechanisms to ensure the safety of processes; - to choose materials depending on their coefficient of friction; - to carry out the analysis of equipment operation on the basis of integrated evaluation of the mechanisms included in their system; - to compare mechanical transfers in terms of their efficiency, power; to select the most effective mechanisms; - to use mechanisms, machines, equipment on the principles of energy saving, materials, labor, time.
Discipline description	
Preconditions necessary for the study of discipline	No
Maximum number of students who can study simultaneously	100 students
Topics of classroom lessons	**Lecture topics:** 1. Fundamentals of theoretical mechanics 2. Types of systems of forces 3. Center of parallel forces and center of gravity 4. Friction. Slip friction, rolling friction 5. Kinematics. Kinematics point 6. Kinematics of the simplest movements of the solid 7. Technical Mechanics. Fundamentals of the theory of machines and mechanisms 8. Major groups of mechanisms 9. Mechanical transfers 10. Tooth gear 11. Pass transfers

	12. Chain transfers 13. Basis of choice of mechanical gear **Themes of practical classes:** 1. Free, non-liberal bodies. 2. Linings and their reactions. 3. Determination of body equilibrium under a system of convergence forces (conditions of the first type). 4. Determination of body balance under a system of convergence forces (conditions of the second type). 5. Finding the coordinates of the center of gravity of the plane figure by the method of partition and the method of addition. 6. Finding the coordinates of the center of gravity of the plane weight by the experimental method 7. Determination of coefficient of friction of sliding of materials 8. Determination of the coefficient of friction of rolling materials 9. Structural analysis of flat mechanisms 10. Tooth gear. 11. Transmissions with flexible links. 12. Determination of the main parameters of the gear wheel
Language of teaching	Ukrainian, English

Department of Animal Hygiene and Basics of Sanitation

Annotation of elective courses

Subject	**The livestock disease prevention**
Professor	Malyna Vasyl Victorovych Candidate of Veterinary Science, Associate Professor , Head of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	4 course, 2 semester
Accepted faculties	Faculty of Biotechnological
A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning : *Knowledge* : - The students need to have professional knowledge and practical skills of livestock health maintaining and carrying out sanitary and preventive measures at the livestock husbandries processing production and utilization of livestock`s products. - The students have to be aware of the basics of pathologic physiology and anatomy. - The students need to know about illness, protective barrier of the organism, the external and internal disease. - The students need to be aware of the pharmacology, medicines, biostimulants, feed supplement and the medicine administration. - The students need to know about traumatism at the livestock husbandry and ways of its prevention; - The students need to know about non-communicable diseases and methods of their prevention - The students need to be aware of the anthropozoonost (diseases that are common to animals and humans) and their prevention, farms protection against the introduction of pathogens. *Skills:* - The students need to have skills of regulatory framework analyzing of the livestock premises construction. - The students need to make projecting tasks. - The students have to determine the necessary

	sizes and acre of processing area. - The students have to choose an incremental linking of the premises. Most of all, they have to calculate the amount of technological equipment, water and electricity consumption that are required by the production process; - The students need to have computer-aided design skills. - The students should calculate the number of cattle stalls of the premises; - The students have to calculate the hourly ventilation volume and thermal balance of the livestock premises; - The students need to calculate the livestock premises lighting. - The students need to calculate the required amount of water for animals watering, feed preparation and technical needs for livestock husbandry; - The students need to calculate the amount of animal residues. - The students have to calculate the volume of sewage drains and develop ways to clean them.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25
Classroom subjects	**The subject of the lectures:** 1. The concept of technological design. 2. Tasks and regulatory framework of design. 3. Stages of design. 4. Characteristics of building materials. 5. General zoo-hygienic requirements of livestock premises construction and operation. 6. Departmental standards of the technological of livestock and poultry enterprises. 7. The sanitary appliance of livestock premises. 8. Design of artificial ventilation systems. 9. Design of cattle-breeding business depending on the keeping animals system and method. 10. Basic requirements of the pig pens design and construction. 11. Basic requirements of the sheepfolds and goat houses design and construction.

	12. Basic requirements of stabling design and construction. 13. Basic requirements of hen houses design and construction. 14. Modern waste treatment plants of livestock husbandry. Methods of animal residues utilization. **Subject of practical training** 1. Regulatory documentation of the livestock premises design and construction. 2. Design tasks. 3. General information of construction activities. 4. Design of the general layout. 5. Computer-aided design. 6. Types of livestock husbandry projects. 7. The cattle stall calculation. 8. Characteristics and properties of materials used for the construction of foundations, walls and partitions, ceilings and floors, roofs, windows and doors. 9. Methods of air volume calculating, heat balance and lighting of livestock premises. 10. The amount calculation of animal residues. Hygienic requirements of sewer design. 11. Requirements of the waste transfer station design and constructions.
The teaching language	The Ukrainian and English languages

Annotation of elective courses

Subject	**Sanitary and hygienic requirements of the production and processing of livestock products**
Professor	Malyna Vasyl Viktorovych Candidate of Veterinary Sciences, Associate Professor, Head of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	3 course, 2 semester
Accepted faculties	Faculty of Biotechnological
A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning : *Knowledge* : - The sanitary measures systems of the livestock infections prevention in the territory of Ukraine, especially anthropozoonosts (diseases common to animals and humans); - The sanitary measures system of the meat and dairy industries. - The methods of disinfection, disinsection and deratization; - The intestinal infections prevention of food processing workers (dysentery, cholera, typhoid fever). - The purulent diseases of food processing workers. The preventative measures. - The personal hygiene rules of the meat and dairy industry workers; - The observance of sanitary protection zones that need to be followed by processing enterprises, apiaries, animal slaughtering enterprises and processing of slaughter products. *Skills* - The students need to apply basic methods of laboratory research; - The students need to take flushes from equipment and walls of industrial premises. - The students need to implement the disinfection, disinsection and deratization of premises; - The students need to plot a technological diagram of the water treatment process at the sewage treatment facilities; - The students need to carry out visual control of the mechanical cleaning quality of mechanical cleaning and washing vehicles; - The students need to control the sanitary and hygienic condition of the

	primary processing plants; - The students need to determine the sanitary and hygienic condition of the technological equipment of the fat section; - The students should determine the sanitary and hygienic condition of technological equipment, containers and other objects of the sausage section; - The students need to investigate the sanitary and hygienic condition of premises and equipment of the technical semi-finished products section. - The students need to draw up acts of the sanitary condition; - The students have to control the milk utensils quality of washing and disinfection.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25 students
Classroom subjects	**The subject of the lectures:** 1. Sanitary measures of the animal infections prevention in Ukraine. 2. Sanitary rules and regulations of meat industry enterprises. 3. Sanitary rules and regulations for meat industry workers. 4. Sanitary rules and regulations of the dairy industry. 5. Sanitary rules and regulations for the dairy industry workers. 6. Basic principles of epidemiology at the meat industry. 7. Food poisoning and its prevention. 8. Disinfection. Methods of disinfection. 9. Disinsection. Methods of the disinfestation. 10. Deratization. Methods of the deratization. 11. Veterinary sanitary engineering of the disinfection and disinfestation. 12. Sanitary requirements of the meat production and products. **Subject of practical training** 1. Preparation of working solutions of detergents and disinfectants. 2. Quality control of equipment, premises washing and disinfection. 3. Methods of water purification. 4. Sewage treatment plants. 5. Control quality of vehicles washing and disinfection. 6. Control of sanitary requirements fulfillment concerning the base of pre-slaughter cattle and slaughtering preparation 7. The monitoring fulfillment of sanitary regulations for livestock processing shop requirements. Drawing up an act on the state of health. 8. Determination of the sanitary and hygienic fat section equipment condition; preparation of disinfecting and washing solutions for their sanitary treatment.

	9. Control of the sanitary and hygienic refrigerators condition. 10. Sanitary-bacteriological and veterinary-sanitary control of the sausage production. 11. The investigation of the workshop premises sanitary state and equipment of technical semi-finished products section. 12. Evaluation of the dairy production sanitary and hygienic state.
The teaching language	The Ukrainian and English languages

Annotation of elective courses

Subject	**Sanitary and hygienic requirements of the production and processing of livestock products**
Professor	Malyna Vasyl Viktorovych Candidate of Veterinary Sciences, Associate Professor, Head of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	3 course, 2 semester
Accepted faculties	Faculty of Biotechnological
A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning : *Knowledge* : - The sanitary measures systems of the livestock infections prevention in the territory of Ukraine, especially anthropozoonosts (diseases common to animals and humans); - The sanitary measures system of the meat and dairy industries. - The methods of disinfection, disinsection and deratization; - The intestinal infections prevention of food processing workers (dysentery, cholera, typhoid fever). - The purulent diseases of food processing workers. The preventative measures. - The personal hygiene rules of the meat and dairy industry workers; - The observance of sanitary protection zones that need to be followed by processing enterprises, apiaries, animal slaughtering enterprises and processing of slaughter products. *Skills* - The students need to apply basic methods of laboratory research;

	- The students need to take flushes from equipment and walls of industrial premises. - The students need to implement the disinfection, disinsection and deratization of premises; - The students need to plot a technological diagram of the water treatment process at the sewage treatment facilities; - The students need to carry out visual control of the mechanical cleaning quality of mechanical cleaning and washing vehicles; - The students need to control the sanitary and hygienic condition of the primary processing plants; - The students need to determine the sanitary and hygienic condition of the technological equipment of the fat section; - The students should determine the sanitary and hygienic condition of technological equipment, containers and other objects of the sausage section; - The students need to investigate the sanitary and hygienic condition of premises and equipment of the technical semi-finished products section. - The students need to draw up acts of the sanitary condition; - The students have to control the milk utensils quality of washing and disinfection.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25 students
Classroom subjects	**The subject of the lectures:** 1. Sanitary measures of the animal infections prevention in Ukraine. 2. Sanitary rules and regulations of meat industry enterprises. 3. Sanitary rules and regulations for meat industry workers. 4. Sanitary rules and regulations of the dairy industry. 5. Sanitary rules and regulations for the dairy industry workers. 6. Basic principles of epidemiology at the meat industry. 7. Food poisoning and its prevention. 8. Disinfection. Methods of disinfection. 9. Disinsection. Methods of the disinfestation. 10. Deratization. Methods of the deratization. 11. Veterinary sanitary engineering of the disinfection and disinfestation. 12. Sanitary requirements of the meat production and products. **Subject of practical training** 1. Preparation of working solutions of detergents and disinfectants. 2. Quality control of equipment, premises washing and disinfection.

	3. Methods of water purification. 4. Sewage treatment plants. 5. Control quality of vehicles washing and disinfection. 6. Control of sanitary requirements fulfillment concerning the base of pre-slaughter cattle and slaughtering preparation 7. The monitoring fulfillment of sanitary regulations for livestock processing shop requirements. Drawing up an act on the state of health. 8. Determination of the sanitary and hygienic fat section equipment condition; preparation of disinfecting and washing solutions for their sanitary treatment. 9. Control of the sanitary and hygienic refrigerators condition. 10. Sanitary-bacteriological and veterinary-sanitary control of the sausage production. 11. The investigation of the workshop premises sanitary state and equipment of technical semi-finished products section. 12. Evaluation of the dairy production sanitary and hygienic state.
The teaching language	The Ukrainian and English languages

Annotation of elective courses

Subject	**Design and construction of the livestock production and processing enterprises**
Professor	Bondarenko Lesya Viktorivna Candidate of Veterinary Science, Assistant of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	2 courses, 2 semester
Accepted faculties	Faculty of Biotechnological
A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning : *Knowledge :* - Students need to have professional knowledge and practical skills in the current legal framework in the field of animal husbandry construction; - The students need to know the current norms structure of livestock technological design of enterprises and state building codes for industrial construction; - The students need to be aware of zoo-hygienic standards of the separate premises construction. - The students need to have knowledge about observance of zoo-hygienic standards of livestock pecking density and fulfillment of

	veterinary and sanitary rules of separate farms or industrial complexes completing; - The students need to be aware of the zoo-hygienic standards as well as the veterinary and sanitary rules of observing the fireproof break; - The students need to have knowledge of the most suitable climatic zone selection and typical projects of livestock premises, as well as enterprises of livestock products processing. *Skills:* - The students need to have skills of regulatory framework analyzing of the livestock premises construction. - The students need to make projecting tasks. - The students have to determine the necessary sizes and acre of processing area. - The students have to choose an incremental linking of the premises. Most of all, they have to calculate the amount of technological equipment, water and electricity consumption that are required by the production process; - The students need to have computer-aided design skills. - The students should calculate the cattle stalls number of the premises; - The students have to calculate the hourly ventilation volume and thermal balance of the livestock premises; - The students need to calculate the livestock premises lighting. - The students need to calculate the required amount of water for animals watering, feed preparation and technical needs for livestock husbandry; - The students need to calculate the amount of animal residues. - The students have to calculate the volume of sewage drains and develop ways to clean them.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25
Classroom subjects	**The subject of the lectures:**

	1. The concept of technological design. 2. Tasks and regulatory framework of design. 3. Stages of design. 4. Characteristics of building materials. 5. General zoo-hygienic requirements of livestock premises construction and operation. 6. Departmental standards of the technological of livestock and poultry enterprises. 7. The sanitary appliance of livestock premises. 8. Design of artificial ventilation systems. 9. Design of cattle-breeding business depending on the keeping animals system and method. 10. Basic requirements of the pig pens design and construction. 11. Basic requirements of the sheepfolds and goat houses design and construction. 12. Basic requirements of stabling design and construction. 13. Basic requirements of hen houses design and construction. 14. Modern waste treatment plants of livestock husbandry. Methods of animal residues utilization. **Subject of practical training** 1. Regulatory documentation of the livestock premises design and construction. 2. Design tasks. 3. General information of construction activities. 4. Design of the general layout. 5. Computer-aided design. 6. Types of livestock husbandry projects. 7. The cattle stall calculation. 8. Characteristics and properties of materials used for the construction of foundations, walls and partitions, ceilings and floors, roofs, windows and doors. 9. Methods of air volume calculating, heat balance and lighting of livestock premises. 10. The calculation amount of animal residues. Hygienic requirements of sewer design. 11. Requirements of the waste transfer station design and constructions.
The teaching language	The Ukrainian and English languages

Annotation of elective courses

Subject	**Design and construction of the livestock production and processing enterprises**
Professor	Bondarenko Lesya Viktorivna Candidate of Veterinary Science, Assistant of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	2 courses, 2 semester
Accepted faculties	Faculty of Biotechnological
A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning : *Knowledge :* - Students need to have professional knowledge and practical skills in the current legal framework in the field of animal husbandry construction; - The students need to know the current norms structure of livestock technological design of enterprises and state building codes for industrial construction; - The students need to be aware of zoo-hygienic standards of the separate premises construction. - The students need to have knowledge about observance of zoo-hygienic standards of livestock pecking density and fulfillment of veterinary and sanitary rules of separate farms or industrial complexes completing; - The students need to be aware of the zoo-hygienic standards as well as the veterinary and sanitary rules of observing the fireproof break; - The students need to have knowledge of the most suitable climatic zone selection and typical projects of livestock premises, as well as enterprises of livestock products processing. *Skills:* - The students need to have skills of regulatory framework analyzing of the livestock premises construction. - The students need to make projecting tasks. - The students have to determine the necessary sizes and acre of processing area. - The students have to choose an incremental linking of the premises. Most of all, they have to calculate the amount of technological

	equipment, water and electricity consumption that are required by the production process; - The students need to have computer-aided design skills. - The students should calculate the cattle stalls number of the premises; - The students have to calculate the hourly ventilation volume and thermal balance of the livestock premises; - The students need to calculate the livestock premises lighting. - The students need to calculate the required amount of water for animals watering, feed preparation and technical needs for livestock husbandry; - The students need to calculate the amount of animal residues. - The students have to calculate the volume of sewage drains and develop ways to clean them.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25
Classroom subjects	**The subject of the lectures:** 1. The concept of technological design. 2. Tasks and regulatory framework of design. 3. Stages of design. 4. Characteristics of building materials. 5. General zoo-hygienic requirements of livestock premises construction and operation. 6. Departmental standards of the technological of livestock and poultry enterprises. 7. The sanitary appliance of livestock premises. 8. Design of artificial ventilation systems. 9. Design of cattle-breeding business depending on the keeping animals system and method. 10. Basic requirements of the pig pens design and construction. 11. Basic requirements of the sheepfolds and goat houses design and construction. 12. Basic requirements of stabling design and construction. 13. Basic requirements of hen houses design and construction.

	14. Modern waste treatment plants of livestock husbandry. Methods of animal residues utilization. **Subject of practical training** 1. Regulatory documentation of the livestock premises design and construction. 2. Design tasks. 3. General information of construction activities. 4. Design of the general layout. 5. Computer-aided design. 6. Types of livestock husbandry projects. 7. The cattle stall calculation. 8. Characteristics and properties of materials used for the construction of foundations, walls and partitions, ceilings and floors, roofs, windows and doors. 9. Methods of air volume calculating, heat balance and lighting of livestock premises. 10. The calculation amount of animal residues. Hygienic requirements of sewer design. 11. Requirements of the waste transfer station design and constructions.
The teaching language	The Ukrainian and English languages

Annotation of elective courses

Subject	**Animal hygiene**
Professor	Yuriy Balatskyi Candidate of Veterinary Science, Associate Professor of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	2 courses, 3 and 4 semesters
Accepted faculties	Faculty of Biotechnological

A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning *:*  *Knowledge:* - Students need to have professional knowledge and practical skills of the mechanisms theoretical bases and biosphere`s and microclimate factors that have an influence on the animals `organisms, zoological standards and rules for animal retention, feeding and taking care of them. - The organization of zoo-hygienic and preventive measures at the intensive use of animals; - The innovative developments in the field of hygiene and sanitation; - The evaluation and projects expertise, construction and re-construction of livestock facilities, recycling plants, etc. - Methods of sanitary and hygienic and well-being assessment of the production technologies and systems of keeping animals selected and effective in the economy. - The sanitary and hygienic expertise of pastures and their utilization, watering holes, conditions of keeping animals in summer camps and on playgrounds, etc. - Students have to be able to determine the resistance of animals to biotic and abiotic factors according to breeding methods ; - Students have to make assessment of the technological impact processes of production and processing of livestock products on the environment. *Skills*: - Students need to be aware of using the necessary reagents, devices and equipment to determine the air temperature and enclosure structures in the premises, humidity and air velocity, atmospheric pressure, airborne harmful gases, mechanical impurities and microorganisms, natural and artificial premises lighting that are based on organoleptic, physicochemical, bacteriological and other methods of research. - The students need to provide optimal microclimate parameters in the premises under different systems, keeping animals and birds methods of different age and production groups.

	- They need to be able to determine the quality of fodder, water and soil. - The students need to have knowledge and practical skills to provide sanitary and preventative measures on farms and other facilities for the livestock products production and processing.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25
Classroom subjects	*The subject of the lectures:* 1. The subject and tasks of "Animal Hygiene". History of hygiene development. 2. Air environment and its hygienic value. 3. Soil hygiene. 4. Water sanitary and hygienic requirements. Water hygiene and animals watering. 5. Sanitary and hygienic requirements of animal feeding and fodder. 6. Sanitary and hygienic requirements to projection and construction of livestock premises. 7. Farm`s veterinary measures. 8. Hygiene of keeping animals in the summer pasture period. 9. Animal management hygiene. 10. Hygiene and veterinarian sanitary requirements of livestock transportation. 11. Hygiene of productive livestock (cattle, pigs, sheep, horses). 12. Hygienic and veterinary-sanitary requirements of poultry farming. 13. Hygiene of rabbits, fur-productive animals, hunting and service dogs as well as laboratory animals. 14. Hygienic requirements of apiculture. *Subject of practical training* 1. Safety arrangements at the laboratory of the Animal Hygiene and Sanitation Basics Department. Microclimate parameters of the livestock premises. 2. Veterinary hygienic air temperature control, atmospheric pressure, hygrometric parameters, speed of movement and cooling properties of air, livestock solar radiation , noise intensity, dust concentration

	and bacterial contemplation, gas composition of air of livestock premises. 3.Sanitary and hygienic assessment of feed quality (rough fodder, grain fodder, succulent fodder, fodder beet roots, combined feed, dry powder fodder and protein complement of animal and vegetable origin). 4. Determination of feed damage caused by microflora and prevention of mycoses and mycotoxicosis. 5. Prevention of animal diseases caused by poisonous and harmful plants. 6. Sanitary and hygienic control of drinking water quality (determination of physical, chemical, biological and microbial water quality).
The teaching language	The Ukrainian and English languages

Annotation of elective courses

Subject	**Animal hygiene**
Professor	Yuriy Balatskyi Candidate of Veterinary Science, Associate Professor of the Department of Animal Hygiene and Basics of Sanitation
Course and semester	2 courses, 3 and 4 semesters
Accepted faculties	Faculty of Biotechnological
A list of competences and relevant learning outcomes provided by the discipline	The following students` knowledge and skills can be considered as the result of the discipline learning *:*  *Knowledge:* - Students need to have professional knowledge and practical skills of the mechanisms theoretical bases and biosphere`s and microclimate factors that have an influence on the animals `organisms, zoological standards and rules for animal retention, feeding and taking care of them. - The organization of zoo-hygienic and preventive measures at the intensive use of animals; - The innovative developments in the field of

	hygiene and sanitation; - The evaluation and projects expertise, construction and re-construction of livestock facilities, recycling plants, etc. - Methods of sanitary and hygienic and well-being assessment of the production technologies and systems of keeping animals selected and effective in the economy. - The sanitary and hygienic expertise of pastures and their utilization, watering holes, conditions of keeping animals in summer camps and on playgrounds, etc. - Students have to be able to determine the resistance of animals to biotic and abiotic factors according to breeding methods ; - Students have to make assessment of the technological impact processes of production and processing of livestock products on the environment. *Skills*: - Students need to be aware of using the necessary reagents, devices and equipment to determine the air temperature and enclosure structures in the premises, humidity and air velocity, atmospheric pressure, airborne harmful gases, mechanical impurities and microorganisms, natural and artificial premises lighting that are based on organoleptic, physicochemical, bacteriological and other methods of research. - The students need to provide optimal microclimate parameters in the premises under different systems, keeping animals and birds methods of different age and production groups. - They need to be able to determine the quality of fodder, water and soil. - The students need to have knowledge and practical skills to provide sanitary and preventative measures on farms and other facilities for the livestock products production and processing.
The discipline description	
Prerequisites necessary of the discipline study	-
The biggest amount of students	25
Classroom subjects	*The subject of the lectures:*

	1. The subject and tasks of "Animal Hygiene". History of hygiene development. 2. Air environment and its hygienic value. 3. Soil hygiene. 4. Water sanitary and hygienic requirements. Water hygiene and animals watering. 5. Sanitary and hygienic requirements of animal feeding and fodder. 6. Sanitary and hygienic requirements to projection and construction of livestock premises. 7. Farm`s veterinary measures. 8. Hygiene of keeping animals in the summer pasture period. 9. Animal management hygiene. 10. Hygiene and veterinarian sanitary requirements of livestock transportation. 11. Hygiene of productive livestock (cattle, pigs, sheep, horses). 12. Hygienic and veterinary-sanitary requirements of poultry farming. 13. Hygiene of rabbits, fur-productive animals, hunting and service dogs as well as laboratory animals. 14. Hygienic requirements of apiculture. *Subject of practical training* 1. Safety arrangements at the laboratory of the Animal Hygiene and Sanitation Basics Department. Microclimate parameters of the livestock premises. 2. Veterinary hygienic air temperature control, atmospheric pressure, hygrometric parameters, speed of movement and cooling properties of air, livestock solar radiation , noise intensity, dust concentration and bacterial contemplation, gas composition of air of livestock premises. 3.Sanitary and hygienic assessment of feed quality (rough fodder, grain fodder, succulent fodder, fodder beet roots, combined feed, dry powder fodder and protein complement of animal and vegetable origin). 4. Determination of feed damage caused by microflora and prevention of mycoses and mycotoxicosis. 5. Prevention of animal diseases caused by poisonous and harmful plants. 6. Sanitary and hygienic control of drinking water quality (determination of physical, chemical, biological and microbial water quality).
The teaching language	The Ukrainian and English languages