Annotation of compulsory educational component

Academic discipline	**Genetics with biometrics**
Tutor	Tkachenko Serhii Vasyliovych PhD in biological sciences, associate professor, department of genetics, breeding and selection of animals
Courses and semesters, when the discipline is planning to study	1 course (bachelor's degree) 1, 2 semesters
Faculties whose students are invited to study discipline	Biological-technological faculty
	According to the requirements of the educational-professional program "Technology of production and processing of livestock products" applicants must acquire the ability to obtain the following competencies: GC 3 (general competence). Ability to apply knowledge in practical situations. GC 4. Knowledge and understanding of the subject area and understanding of professional activity. GC 7. Ability to evaluate and ensure the quality of work performed. PC 2 (professional competence). The ability to use of modern knowledge about methods of reproduction, patterns of individual development and breeding of animals for effective professional activity in the field of animal husbandry. The result of studying the discipline is the students' acquisition of such knowledge and skills: - to follow one's own improvement and master modern knowledge (to know the features, possibilities and achievements of genetic engineering and its use in modern production conditions of agricultural products); - to create measures to improve selection and breeding work in animal husbandry (to know the genetic bases of selection and the main genes of economically useful traits of farm animals); - to apply biological, physiological and biochemical features of animals and their products when choosing production technology and conducting research activities (to know the classification of mutations, the causes of their occurrence and the possibilities of their detection and prevention; to know the signs of hereditary adaptation and resistance of animals against diseases); - the ability to use knowledge of the basic principles of scientific methodology and methods of conducting laboratory and industrial research (to know biometric methods of studying the variability and heredity of traits in the population; to know the genetic parameters of quantitative and qualitative traits in the population: variability, heritability, correlation, repeatability, plasticity, stability).
Description of the discipline	
Preconditions necessary for the study of discipline	Compulsory educational component «Genetics with biometrics» is based on knowledge of such disciplines as «Animal morphology», «Animal physiology», studied in the first semester, and the course "Biology", which were studied in the school.

Maximum number of students who can study simultaneously	75 students
Lesson plans	**Lectures** 1. Introduction. The subject of genetics. 2. Biometric methods in genetics. 3. Cytological bases of heredity. 4. Molecular basis of heredity. 5. Genetic engineering in biotechnology. 6. Patterns of inheritance of traits in sexual reproduction. (Mendelism). 7. The features of non allelic genes. Lethal genes. 8. The chromosomal basis of inheritance. 9. The genetics of gender. 10. The mutation and their classification, its causes and methods. 11. Genetic basis of ontogenesis. 12. Genetics of immunity, anomalies and animal diseases. 13. Immunogenetics and genetic polymorphism of proteins. 14. Genetics of animal behavior. 15. Genetics of populations. 16. Special genetics of farm animals. 17. Genetic basis of animal breeding. **Practical classes** 1. Variation series and the variation order. Graphic representation of the variation series. 2. Calculation of X, σ, C_v, and m_x, m_σ, m_{Cv} for large samples ($n \geq 30$). 3. Calculation of X, σ, C_v, and m_x, m_σ, m_{Cv} for small samples ($n < 30$). Value and calculation of td and determination of P. 4. Selection value and calculation *ч,* $m_ч$, $t_ч$ for large samples ($n \geq 30$). 5. Calculation *ч,* $m_ч$, $t_ч$ for small samples ($n < 30$). Application in selection and calculation of $R_{x/y}$ and $R_{y/x}$ in large and small samples. 6. Use in selection and calculation of h^2, Sd and Es; rw. 7. Method X^2 (chi-squared test) in estamation of probability and difference between two groups of animals. 8. Cytological bases of heredity (cell structure, chromosomes). 9. Cytological bases of heredity (mitosis, meiosis, gametogenesis). 10. Graphic modeling of structure and synthesis of nucleic acids. 11. Graphic modeling of protein synthesis in a cell and gene mutations. 12. Inheritance of traits in monohybrid crossing. 13. Inheritance of traits in dihybrid crossing. 14. Inheritance of traits in the interaction between allelic genes. 15. Inheritance of traits in the interaction between non allelic genes. 16. The genetics of gender. Inheritance of sex-linked traits. 17. The chromosomal theory of inheritance. Genetic maps of chromosomes. 18. Immunogenetics. Identification of origin. 19. Calculation of frequency of phenotypes, genotypes and concentration of genes. 20. Calculation of population genetic balance (Hardy-Weinberg Principle).
Teaching language	Ukrainian