

Academic discipline	Population genetics
Tutor	Starostenko Iryna Serhiivna 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) 1 semester
Faculties whose students are invited to study discipline	Biological-technological faculty
List of competencies and learning-related outcomes that discipline provides	<p>According to the requirements of the educational and professional program "Technology of production and processing of animal husbandry products", applicants must acquire the ability to acquire the following competencies:</p> <p>GC 2. Ability to conduct research at the appropriate level. GC 3. Ability to learn and master modern knowledge. GC 4. Skills in using information and communication technologies. PC 15. Ability to use professional and professional knowledge in in the field of breeding and selection of animals, to master the basic processes of genetic analysis in the latest technologies of production and processing of animal husbandry products. PC 16. Ability to use knowledge of basic processes of changing genetic information in animal populations. PC 17. Ability to apply various methods of genetic engineering; methods and methods of improving the technological process of selection and breeding of animals.</p> <p>The result of teaching the discipline is the acquisition of such knowledge by students and skills:</p> <ul style="list-style-type: none"> - to follow their own improvement and master modern knowledge (know the achievements of genetics on the properties of populations and methods of their determination); Hardy-Weinberg's law for real populations in solving problems of genetics, ecology, breeding and medicine, to know the factors of genetic progress in populism actions; know the genetic problems of hybridization, inbreeding, outbreeding and inbred depression); - to create measures to improve breeding work in animal husbandry (to know the genetic consequences of breeding and genetic engineering technologies; to know the factors and conditions of genetic sustainability of populations, mechanisms for solving the problem of biodiversity conservation; to know the laws of selection process management to know genetic and mathematical models of management of populations of agricultural animals and their use in selection and breeding).
Description of the discipline	
Prerequisites needed for studying the discipline	The elective course "Population Genetics" is based on knowledge of such disciplines as "Genetics", "Morphology of agriculture". animals "studied in the 1st year, and" Physiology ", " Microbiology ", " Biochemistry ", studied in the 2nd year.
Students' limit in a group	15 students
Topics of in-class activity	Lecture topics

	<ol style="list-style-type: none"> 1. Introduction. Types of populations. 2. Hardy-Weinberg's law. Application of Castle-Hardy-Weinberg law. Deviations from Hardy-Weinberg's law due to certain factors. 3. Factors of dynamics of genetic structure of populations. 4. Variability and its influence on the genetic structure of populations. 5. Selection, its forms and impact on the population. 6. Inbreeding and genetic structure of populations. 7. Influence of biotechnological methods on the state and dynamics of populations. 8. Monitoring of the gene pool of farm animal populations in Ukraine. <p style="text-align: center;">Topics of practical classes</p> <ol style="list-style-type: none"> 1. Basic terms and provisions of population genetics; the law of addition and multiplication of probabilities; frequency and probability. Discrete probability distribution laws. 2. Structure of nucleic acid and protein molecules. Polymorphism. 3. Hardy-Weinberg's law. Determination of gene frequencies and genotypes. Graphical representation of populations. 4. Rank correlation (Spearman and Kendall rank correlation coefficient, Kendall concordance coefficient). Representation of changes in different scales. 5. Methods for assessing genetic variability. 6. Comparison of two samples by level of variability (Fisher-Snedekor test, Cochran test, Bartlett test, nonparametric Leuven test). 7. Estimation of hair dryer frequencies (phenetics of agricultural animals, its basic provisions, tasks and methods, methods of hair dryer frequency estimation). 8. Subdivision and migration. Additional consideration of insulation. 9. Factors of dynamics of genetic structure of populations. Types of selection and calculation of allele frequencies. 10. Calculation of the inbreeding coefficient. 11. Application of heterosis. 12. Conducting rank analysis of variance (one-way rank analysis of variance of Kraskel-Wallis). 13. Two-factor Friedman analysis of variance (without repetitions, standard, hierarchical). 14. Indices of tribal value (based on the assessment of offspring, parents, gang and group of traits).
Language of teaching	Ukrainian, in English

