Annotation of elective educational component «Population genetics»

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) 2 semester
Faculties whose students are invited to study discipline	Biological-technological faculty
List of competencies and learning-related outcomes that discipline provides	According to the requirements of the educational-professional program "Technology of production and processing of livestock products" applicants should acquire the ability to obtain the following competencies: GC 1 (general competence). Ability to abstract thinking, analysis and synthesis. GC 2. Skills in using information and communication technologies. PC 3 (professional competence). The ability to organize and control the implementation of measures aimed at improving the selection and breeding work in animal husbandry. FC 6. The ability to practically manage working or educational processes in the field of production and processing of products of animal origin, which are complex, unpredictable and require new strategic approaches. PC 10. The ability to clearly and unambiguously convey one's own knowledge, conclusions and arguments to specialists and non-specialists, in particular to people who are studying. The result of studying the discipline is the acquisition by students of the following knowledge and skills: - to carry out research and/or carry out innovative activities with the aim of obtaining new knowledge and creating new technologies and products in the field of animal husbandry and in wider multidisciplinary contexts (to know the achievements of genetics regarding the properties of populations and methods of their determination; to be able to apply the genetic consequences of selection and genetic engineering technologies); - to apply modern mathematical methods, information technologies and specialized software for research and development in the field of technologies for the production and processing of livestock products (to be able to apply the Hardy-Weinberg law to real populations when solving problems of genetics, ecology, selection and medicine; to know the factors and conditions of genetic stability of populations, mechanisms for solving the problem of preserving biological diversity; to know the genetic and mathematical models of management of farm animals population and their use in selection process); - to search for the necessary data in scientific literature, databases and other sources, analyze and evaluate these data (to know the factors of genetic progress in populations; be able to solve genetic problems of hybridization, inbreeding, outbreeding and inbreeding depression);

	- to be responsible for the development of professional knowledge and practices, evaluation of the team's strategic development, formation of an effective personnel policy (to know the laws of management of the selection process at the population level).
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	25 students
Topics of in-class activity	*Topics of lectures* 1. Introduction. Types of populations. 2. The Hardy-Weinberg law and its practical use. 3. Factors of the dynamics of the genetic structure of populations. 4. Variability and its influence on the genetic structure of populations. 5. Inbreeding and genetic structure of populations. 6. Selection, its forms and impact on the population. 7. The impact of biotechnological methods on the state and dynamics of populations. 8. Monitoring of the gene pool of agricultural animal populations in Ukraine. *Topics of practical classes* 1. The structure of nucleic acid molecules and proteins. Polymorphism. 2. Hardy-Weinberg law. Determination of gene frequencies and genotypes. Graphic representation of populations. 3. Estimation of frequencies of phenes (phenetics of rural and urban animals, its main provisions, tasks and methods, methods of estimation of frequencies of phenes). 4. Methods of assessing genetic variability. 5. Rank correlation (Spearman and Kendall's rank correlation coefficient, Kendall's concordance coefficient). Presentation of variables in different scales. 6. Factors of the dynamics of the genetic structure of populations. Types of selection and calculation of allele frequencies. 7. Application of heterosis in the population. Subdivision and migration. Additional consideration of insulation. 8. Calculation of the inbreeding coefficient. 9. Genetic polymorphism and its meaning.
Language of teaching	Ukrainian, English