

Course Unit Descriptor

Study Programme: Veterinary Medicine
Course Unit Title: Veterinary genetics
Course Unit Code: 3IVM3O14
Name of Lecturer(s): Full professor Snežana Trivunović, teaching assistant Momčilo Šaran, teaching assistant Ljuba Štrbac
Type and Level of Studies: Integrated studies
Course Status (compulsory/elective): Compulsory
Semester (winter/summer): Winter
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face
Number of ECTS Allocated: 4
Prerequisites: None
Course Aims: The subject allows students to acquire knowledge about the basic principles and laws of inherit both quantitative and qualitative traits of animals in order to understand the properties of the genetic and phenotypic level, about the transfer of properties from parents to offspring. Transfer from one to the next generation of characteristic forms of metabolism potentially contained in a cell whose implementation required certain environmental conditions. This would be the acquired skills of applying basic principles to inherit in promoting yield and quality of livestock products and the ability to genetically improve existing and create new lines and hybrids of all kinds of domestic animals.
Learning Outcomes: After completing this course, the student should be able to explain and understand the basic concepts of genetics, legality inherit characteristics and threshold characteristics, different and analyzes the emergence of the most important traits including disease and abnormalities in animals. The development of theoretical and practical ideas in the field of genetics and breeding and improvement of environmental conditions that are adapted to the industrial model of production and keeping of animals, a student should achieve progress in raising the genetic and production as well as the economic potential of the animal population.
Syllabus: <i>Theory</i> Figure cells and chromosomes. Cell division and fertilization. The structure and function of the gene. Mendelian inheritance legality of qualitative and quantitative traits. Multiple alleles and gene interactions. Legality of inheritance-related genes and traits. Crossing-over. Recombination of genes. Sex determination and sexually related properties. The inheritance anomaly, disease and drug resistance in animals, genetic susceptibility and resistance to pathogens. Genetics of cancer. Structural and numerical aberrations of chromosomes. Genotypic and phenotypic distributions of quantitative traits. Probability and χ^2 test. Genetic basis of heterosis and its usage. Inbreeding in the population. Genetics of populations. Genetic ethology. Immunogenetics. Quantitative genetics and quantitative traits in animals (significant loci and markers for economically important traits in domestic animals). Animal Genetics and Breeding. The selection and crossbreeding animals. The success of selection on quantitative traits. Genetic parameters. Ethical aspects of modern animal genetics. Cloning and genetic engineering in animals. <i>Practice</i> Practical classes are held during the exercise program and followed the lecture topic, working with concrete practical examples and assignments. Writing term papers accompanying methodological units listed in the course content. Exercises

include laboratory work as well as testing knowledge orally and in writing.

Required Reading:

1. Vidović V., Lukač D. Genetika životinja, Poljoprivredni fakultet, Novi Sad, 2010.
2. Vidović V., Stupar M. Molekulska genetika, Poljoprivredni fakultet, Novi Sad, 2010.
3. Vidović V., Principi i metodi oplemenjivanja životinja, Poljoprivredni fakultet, Novi Sad, 2009.
4. Delić N., Stanimirović Z., Principi genetike, Fakultet veterinarske medicine, Beograd, 2004.

Weekly Contact Hours:

Lectures: 2

Practical work: 1

Teaching Methods: The theoretical part of the training is conducted with the use of presentations that are prepared so that students have a visual representation of lessons. Practical classes are conducted through presentations, seminars, and other modern teaching and laboratory resources.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Lecture attendance	5	written exam	20
Test	30	oral exam	30
Exercise attendance	5	
Seminar(s)	10		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.