

Study Programme: Agronomy		
Course Unit Title: Linear methods in animal breeding		
Course Unit Code: IP4		
Name of Lecturer(s): Full professor Snežana Trivunović, associate professor Ljuba Štrbac		
Type and Level of Studies: Doctoral academic studies		
Course Status (compulsory/elective): Elective		
Semester (winter/summer): Summer		
Language of instruction: Serbian, but individual consultations and materials are offered to incoming students in English		
Mode of course unit delivery (face-to-face/distance learning): face-to-face		
Number of ECTS Allocated: 7		
Prerequisites: None		
Course Aims: Acquisition of theoretical and practical knowledge in the field of linear methods and their application for the assessment of breeding values of animals.		
Learning Outcomes: The student is trained for independent work with databases and quantitative genetic analysis using appropriate linear models in order to estimation the breeding value, ranking of animals and assessment of genetic progress, as well as training the student for independent scientific and research work in laboratories and research institutes, centers and faculties.		
Syllabus: <i>Theory</i> Development of linear models. Analysis of variance and covariance (LS, ML, REML). Estimates of breeding values (BLUP: sire model and animal model for one trait, sire model and animal model for multiple traits, reduced animal model, repeated measures model, fixed regression model, random regression model). Selection index. International Evaluation of Breeding Values (MACE). <i>Practice</i> Formation of the database. Constructing a linear model. Variance and covariance estimation (REML). Estimates of breeding values (BLUP: sire and animal model for one trait, sire and animal model for multiple traits, reduced animal model, repeated measures model, fixed regression model, random regression model). Selection index. International evaluations of breeding values (MACE).		
Required Reading: 1. Mrode R. A., Thompson R. (2005): Linear Models For The Prediction Of Animal Breeding Values. 2. Bulmer, E. (1997): Mathematical Theory of Quantitative genetics. 3. Freund R., Ramon C. Littell, W. Stroup (2002): SAS for Linear Models		
Weekly Contact Hours:	Lectures: 3	Practical work: 5
Teaching Methods: The theoretical part of the teaching is conducted in the form of lectures with the use of presentations and consultations. The practical part of the teaching is carried out in the computer laboratory with the application of modern software for the		

application of linear methods in animal breeding.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	-	written exam	-
Practical work	-	oral exam	50
Preliminary exam(s)	-	
Seminar(s)	50		

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