

Study Programme: AGRONOMY		
Course Unit Title: QUANTITATIVE METHODS IN ECOLOGY		
Course Unit Code: 19.AGR069		
Name of Lecturer(s): prof. Branka Ljevnaić-Mašić, PhD; prof. Aleksandra Petrović, PhD, doc. Ivana Ivanović, PhD		
Type and Level of Studies: Doctoral academic studies		
Course Status (compulsory/elective): elective		
Semester (winter/summer): summer		
Language of instruction: English		
Mode of course unit delivery (face-to-face/distance learning): face-to-face		
Number of ECTS Allocated: 7		
Prerequisites: none		
Course Aims: Gained knowledge and practice regarding quantitative methods in ecology, when analyzing different phyto- and zoocenoses. Education and training of students for the selection and application of quantitative methods that are used in the analysis of various features of biocenoses, the application of these methods, as well as the theoretical background in order to understand suitability of certain methods for specific case studies, as well as interpretation of the obtained results and variables calculation in explaining ecological processes.		
Learning Outcomes: Theoretical and practical knowledge regarding the selection and application of quantitative methods used to explain ecological processes and understanding the structure and functioning of living communities, as well as to observe species, and their spatial and temporal changes.		
Syllabus: <i>Theory</i> Definition of basic ecological organization levels (from individual to biosphere). Basic synecology and autecology. Agrobiocenosis spatial and temporal dynamics. Species structure and levels of agrobiocenosis. Population ecology as the basis of the living community's ecology. Metapopulations. Population theories. Constancy of agrobiocenoses through degrees of stability. Similarities and differences between communities. Diversity of communities. Effective number of species. Ecological niche. The concept of R and K-selection. Caswell's neutral model. Models of distribution of abundance of plant and animal species. Equilibrium models in ecology. Succession models. <i>Practice</i> Calculation methods for the coefficients of similarity and dissimilarity among communities. Binary coefficients. Quantitative coefficients. Association coefficients. Graphical displays of measurements. Hierarchical clusters. Methods of calculating community diversity. Selection of adequate indices of diversity. Hill numbers for calculating the effective number of species. Indices of evenness in agrobiocenoses. Caswell's model. Methods of calculating species abundance distribution, graphical representations, descriptive and mechanistic approaches. Equilibrium models in agrobiocenoses. Passive sampling models. Homogeneity and heterogeneity indices of communities and concordances. Determination of succession degrees.		
Required Reading: Šolić, M. (2015): Quantitative methods in community ecology. Institute of Oceanography and Fishery, Split. Šolić, M. (2014): Ecology of populations. Institute of Oceanography and Fishery, Split. Landolt E. (2010): Flora indicativa – Ecological Indicator Values and Biological Attributes of the Flora of Switzerland and the Alps. Southwood T.R.E, Henderson P.A. (2000): Ecological methods. Blackwell Science Ltd Đukić N., Maletin S., Petrović A. (2018): Zoocology. Faculty of Agriculture, University of Novi Sad.		
Weekly Contact Hours:	Lectures: 4	Practical work: 4
Teaching Methods: Oral presentation and consultations. Methods of presentations, demonstrations and illustrations in practical work in the field and in the laboratory. Practical laboratory and experimental methods.		
Knowledge Assessment (maximum of 100 points):		

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Practical work	20	oral exam	50
Colloquium		
Seminar(s)	30		

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