

Course Unit Descriptor

Study Programme: MSc Biology			
Course Unit Title: Advanced population genetics			
Course Unit Code: MB37			
Name of Lecturer(s): Prof. Dr. Mihajla Đan			
Type and Level of Studies: Master's studies			
Course Status (compulsory/elective): elective			
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: 7			
Prerequisites:			
Course aims: The aim of this course is to introduce students to the mechanisms of transmissions of genetic informations at the population level.			
Learning outcomes After successful fulfilling of pre-exam and exam obligations student can explain genetic variation within populations and how genetic structure of populations is influenced by mutation, migration, genetic drift and natural selection and to apply basic models of population genetics in conservation, phylogeography, taxonomy, phylogenetics and animal and plant breeding researches.			
Syllabus <i>Theoretical instruction</i> Methods of detection of genetic variations in natural populations. Estimation and calculation of genetic variability parameters. Spatial and temporal dynamics of gene pool. Effective population size. Genetic monitoring. Metapopulation analysis. Quantitative genetics. Molecular taxonomy. Phylogenetics and phylogeography. Conservation genetics. Breeding strategies. <i>Practical laboratory</i> Calculation of genetic variability parameters. Analysis of genetic structure of natural population. Analysis of variance. Genetic differentiation. Phylogenetic trees construction. Heritability. Correlation and regression.			
Literature Gillespie JH. Population Genetics A Concise Guide. The John Hopkins University Press, USA, 2004. Hartl DL. A Primer of Population Genetics. Sinauer Associates, Inc., Sunderland, 1988. Анђелковић М., Стаменковић-Радак М. Гени у популацијама. Алта Нова, Београд, 2013. Frankham R., Ballou JO, Briscoe DA. Introduction to Conservation Genetics. Cambridge University Press, 2002.			
Weekly teaching load	Lectures: 2	Teaching laboratory: 2	Other forms of teaching: 4
Teaching methods lectures, computer labs, tuition			
Evaluation of knowledge (maximum score 100)			
Pre-exam obligation	points	Final exam	points
Student engagement in lectures		Written exam	
Seminar		Oral exam	60
Tests	40		
Practical laboratory			