

<b>Study Programme : PhD in Biology</b>			
Degree level: Doctoral degree			
<b>Course Title: Evolutionary Genetics</b>			
<b>Professor: dr Vesna Milankov, dr Ljubinka Francuski Marčetić</b>			
<b>Subject: DNB024</b>			
<b>Elective Course</b>			
<b>Number of ECTS: 15</b>			
<b>Prerequisites:</b>			
<b>Course Objective:</b> The course covers a comprehensive information of modern evolutionary genetics from molecules to morphology including molecular variation and evolution, selection and genetic polymorphisms, linkage and breeding system evolution, quantitative genetics and phenotypic evolution, gene flow and population structure, speciation, behavior and ecology. The course emphasis the connection of evolutionary genetics and evolutionary biology.			
<b>Course Outcome:</b> Students gain contemporary knowledge and skills in studying and understanding of evolutionary phenomena.			
<b>Course Content:</b> <i>Theoretical part</i> Population genetics, codon bias, gene conversion, evidence for balancing, directional, and background selection in molecular evolution, genetics of complex polymorphisms (parasites and maintenance of DNA variation; antibiotic resistance), the evolution of sex and recombination, the evolution of breeding systems, sexual selection in populations, the role of selection in speciation, evolutionary genetics of speciation, and population genetics and evolutionary ecology, genetics of host-parasite interactions. <i>Practical part</i> Quantification of genetic diversity of subpopulation, population, metapopulation and species using molecular and phenotypic markers; Measuring of gene flow among conspecific populations; Evolutionary relationships between closely related species; Phylogeographic structure of widespread species.			
<b>Reading List:</b> 1. Coyne, J.A., Orr, H.A. (2004) Speciation. Sinauer Associates, Inc. 2. Evolutionary genetics. Eds. Singh, R.S., Krimbas, C.B. 2000. Cambridge University Press. 3. Hoffmann, A.A., Parsons, P.A. 1993. Evolutionary genetics and environmental stress. Oxford University Press. 4. Carroll, S.B., Grenier, J.K., Weatherbee, S.D. (2004) From DNA to Diversity: Molecular Genetics and the Evolution of animal Design. Blackwell Publishers.			
<b>Total hours:</b>			
Lectures: 5	Practicals:	Other:	Student research work: 5
<b>Methods of instruction:</b> oral presentation, study scientific papers			
Assessment (maximum number of points 100)			
<b>Requirements</b> Seminar 50, oral exam 50			
<b>Remark:</b>			