

Course Unit Descriptor

<b>Study Programme:</b> PhD in Biological Sciences		
<b>Course Unit Title:</b> Evolutionary Genetics		
<b>Course Unit Code:</b> DNB024		
<b>Name of Lecturer(s):</b> dr Vesna Milankov, dr Ljubinka Francuski Marčetić		
<b>Type and Level of Studies:</b> PhD Degree		
<b>Course Status (compulsory/elective):</b> Elective		
<b>Semester (winter/summer):</b> Winter		
<b>Language of instruction:</b> English		
<b>Mode of course unit delivery (face-to-face/distance learning):</b> face-to-face		
<b>Number of ECTS Allocated:</b> 15		
<b>Prerequisites:</b> None		
<p><b>Course Aims:</b></p> <p>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.</p>		
<p><b>Learning Outcomes:</b></p> <p>Students gain contemporary knowledge and skills in studying and understanding of evolutionary phenomena.</p>		
<p><b>Syllabus:</b></p> <p><i>Theory</i></p> <p>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.</p> <p><i>Practice</i></p> <p>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.</p>		
<p><b>Required Reading:</b></p> <ol style="list-style-type: none"> <li>1. Coyne, J.A., Orr, H.A. (2004) Speciation. Sinauer Associates, Inc.</li> <li>2. Evolutionary genetics. Eds. Singh, R.S., Krimbas, C.B. 2000. Cambridge University Press.</li> <li>3. Hoffmann, A.A., Parsons, P.A. 1993. Evolutionary genetics and environmental stress. Oxford University Press.</li> <li>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.</li> </ol>		
<b>Weekly Contact Hours:</b>	<b>Lectures:</b> 5	<b>Practical work:</b> 0 + 5
<p><b>Teaching Methods:</b></p> <p>oral presentation, study scientific papers</p>		
<b>Knowledge Assessment (maximum of 100 points):</b>		

<b>Pre-exam obligations</b>	points	<b>Final exam</b>	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.